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TARGETED RECRUITMENT FOR NAVAL SPECIAL WARFARE (SEALS): CONNECTING NSW TO RECRUIT POOLS WITH SOCIAL MOVEMENT THEORY

by

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June 2012

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TARGETED RECRUITMENT FOR NAVAL SPECIAL WARFARE (SEALS): CONNECTING NSW TO RECRUIT POOLS WITH SOCIAL MOVEMENT THEORY

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ABSTRACT

The ability to maintain and grow the inventory of Sea, Air, and Land (SEAL) operators depends on the ability of NSW to recruit high probability candidates effectively and increase the retention rates within the existing ranks of SEAL operators. Using data from the BUDs/Pride Database,[1] this thesis draws on logistic multivariate regression models to test the theory that candidates with a prior strong social tie to NSW are more likely to complete the BUDs training successfully than those with no such tie. Geospatial mapping supplements this analysis by providing relatively easy to interpret visualizations of the recruit network. The combination of the logistic models and the geospatial interpretations of the data provide a clearer picture of the entire recruit network. Looking at the results of the logistic regression model, and the ordered logistic regression model, it can been seen that students with a strong tie, either to NSW or another special operations force within the U.S. military, are more likely than students without such a tie to make it through the training pipeline.

[1] The BUDS/Pride Database is a comprehensive database consisting of ~10,000 BUD/S candidates and catalogues their overall success/failure rates through every phase of BUD/S. The dataset is exceptionally detailed, and provides such data as age, education level, marital status, reason for being a SEAL, influences, AFQT scores, physical testing scores, sports played, home state, home town, and so forth. Dataset provided to the author by Naval Special Warfare Recruit Directorate (NSWRD) in May 2011.

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LIST OF ACRONYMS AND ABBREVIATIONS

AFQT	Armed Forces Qualification Test
BUD/S	Basic Underwater Demolition/ SEAL School
CNRC	Commander Naval Recruiting Command
CNSWC	Commander Naval Special Warfare Command
COA	Course of Action
C-SORT	Computerized Special Operations Resiliency Test
DEP	Delayed Entry Program
DOR	Drop on Request
DV	Dependent Variable
EAOS	End of Active Obligated Service
EOD	Explosive Ordnance Disposal
ESRI	Environmental Systems Research Institute
JCETS	Joint and Combined Exercises for Training
IBS	Inflatable Boat Small
NCDU	Naval Combat Demolition Unit
NPS	Naval Postgraduate School
NSW	Naval Special Warfare
NSWC	Naval Special Warfare Center
NSWRD	Naval Special Warfare Recruiting Directorate
PTRR	Physical Training Rehabilitation and Remediation
SEAL	Sea, Air, and Land
SMT	Social Movement Theory
SOF	Special Operation Forces
SPPI	Seal Production Process Improvement
SQT	SEAL Qualification Training
UDT	Underwater Demolition Teams

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I. INTRODUCTION

The Navy SEAL Team community, like every other U.S. special operations community, is at the forefront of combating terrorism worldwide. While the conflicts in Iraq and Afghanistan have garnered the lion's share of media and public attention, the limited number of SEAL operators deploy not only to these highly publicized conflicts but are also conducting joint and combined exercises for training (JCETS) across the globe to strengthen and create military-to-military relationships between the United States and strategic allies. The increased demand for SEALs in the past decade of constant warfare places great strains upon the existing Naval Special Warfare (NSW) SEAL force. The ability to maintain and grow the inventory of SEAL operators depends on the ability of NSW to recruit high probability candidates effectively and increase the retention rates within the existing ranks of SEAL operators. This thesis seeks to identify those factors that lead to higher retention rates with an eye to aiding recruitment efforts at growing the SEAL force.

Special operations forces (SOF) have five truths.

1. Humans are more important than their hardware
2. Quality is more important than quantity
3. SOF cannot be mass produced
4. Competent SOF cannot be created after emergencies occur
5. Most special operations require non-SOF assistance[2]

Adhering to the principle of quality over quantity has never been an issue within the NSW community. The initial training pipeline to become a SEAL is called Basic Underwater Demolition School, known as BUD/S from its acronym, is commonly regarded as the toughest military training in the world. Historically the success rate of making it through this initial training school has been approximately 30 percent.[3] These low rates pay testament to the SOF truth that SOF cannot be mass produced. Without

[2] "SOF Truths," (n.d.), http://www.soc.mil/USASOC%20Headquarters/SOF%20Truths.html.

[3] Lisa J. Mills and Janet D. Held, "Optimizing US Navy SEAL Selection," US Navy Selection & Classification Office, 46th Annual International Military Testing Association Conference, October 26–28, 2004, http://www.internationalmta.org/Documents/2004/2004072P.pdf.

sacrificing the quality of the SEAL force by maintaining the high standards throughout training, NSW struggles to create a recruit basin that will allow growth in the force structure.

Using data from the BUDs/Pride Database,[4] this thesis draws on statistical and geospatial methods to test the theory that candidates with a prior strong social tie to NSW are more likely to complete the BUDs training successfully than those with no such tie. More specifically, logistic multivariate regression models are used to test the impact of strong social ties while controlling for other factors believed to play an important role in retention rates (e.g., education level, sports played, age, geographic origin, and ethnicity). Geospatial mapping supplements this analysis by providing relatively easy to interpret visualizations of the recruit network. The combination of the logistic models and the geospatial interpretations of the data provide a clearer picture of the entire recruit network.

The thesis proceeds as follows. Chapter II presents the background information required by a reader with little to no prior knowledge of SEAL teams. The overview of the SEALs is divided into two sections. The first section is a historical overview of the SEAL origins. The second section is a review of recent NSW training updates. The remaining portion of Chapter II is an outline of recent and relevant theories within social movement theory (SMT). Within this section, terms, such as strong tie, and weak ties are defined, and their relevancy within SMT discussed. Chapter III describes the data and methodologies used to test the author's hypothesis, as well as discusses the results of the statistical analyses. The fourth chapter geographically illustrates various aspects of the SEAL recruit data, and demonstrates the utility of this type of analysis for refining recruitment efforts. The final chapter, while not providing specific courses of actions (COA) for NSW in implementing SEAL recruitment efforts utilizing strong ties, does

[4] The BUDS/Pride Database is a comprehensive database consisting of ~10,000 BUD/S candidates and catalogues their overall success/failure rates through every phase of BUD/S. The data-set is exceptionally detailed, providing such data as: age, education level, marital status, reason for being a SEAL, influences, AFQT scores, physical testing scores, sports played, home state, home town, etc…. Dataset provided to author by Naval Special Warfare Recruit Directorate (NSWRD) in May 2011.

emphasize the key groups of individuals the author feels NSW must incorporate into its recruitment/retention efforts.

The ability to increase the inventory of SEALS is a complicated process that will take time. The sustainability of such efforts will require NSW to continually research, assess, and implement recruiting efforts that resonate with the niche recruitment pools required for this warrior community. This purpose of this thesis is to find highly probable successful candidate recruitment pools for NSW.

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II. BACKGROUND

A. HISTORY OF THE SEAL TEAMS

"Today's Naval Special Warfare operators can trace their origins to the Scouts and Raiders, Naval Combat Demolition Units, Office of Strategic Services Operational Swimmers, Underwater Demolition Teams and Motor Torpedo Boat Squadrons of World War II."[5] In both the European and Pacific theaters of action of WWII, the predecessors of today's SEAL teams were essential players in the amphibious operations required to advance against the axis forces. The Naval Combat Demolition Units (NCDU) saw action on the beaches of Utah and Omaha and cleared German obstacles under ferocious enemy fire to allow allied forces to come ashore during the invasion of Normandy the sixth of June 1944. In the Pacific theater of operations, the Underwater Demolition Teams (UDTs) were tasked with conducting hydrographic reconnaissance of the various coral atolls to avoid near catastrophic losses of life like those experienced on Tarawa when landing crafts were forced to drop off their Marine cargo when the crafts ran aground on the surrounding coral reef.

After WWII the remaining UDTs conducted hydrographic reconnaissance and obstacle clearance missions in support of General McArthur's amphibious invasion at Inchon during the Korean War. Throughout the Korean conflict, the scope of the missions performed by the UDTs expanded. Missions conducted by the UDT ventured inland with various forms of raids and ambushes to harass enemy troops and disrupt/destroy infrastructure.

The UDTs were able to exploit the enemy's belief that areas behind the lines of battle were secure. Utilizing both surface vessels and submarines to launch their small rubber raiding crafts, the UDTs were able to infiltrate enemy territory. From the sea for surprise, the demolition teams came, and back to the sea they went affording them protection against any would be pursuers. The success of the UDTs in Korea and the

[5] "History of the SEALs," (n.d.), http://www.sealswcc.com/navy-seals-history.aspx.

recognition of the large number of countries that have littoral borders susceptible to seaborne commando missions, are key factors in the evolution of what is now the modern day SEAL teams.

In 1962, President John F. Kennedy authorized the creation of a naval commando unit. "The first SEAL teams were commissioned just in time for the Vietnam War, and the early character of the SEALs was formed in that conflict. The corporate knowledge of SEAL operations in Vietnam [during the later stages of the war] rested with the shrinking handful of veteran enlisted men, some of whom went back for as many as seven tours."[6] The immense interconnected waterways of the Mekong Delta Region used by the communist forces were perfectly suited for the SEAL platoons designed to work in and around the water. Areas once thought to be safe havens from the conventional American military were now prowled by a force that became known to their enemies as areas once thought to be safe havens from the conventional American military were now prowled by a force that became known to their enemies as the men with green faces. From their conception during the Vietnam era of the 1960s and 1970s until today, the training and screening of candidates wanting to join this fraternity of warriors has remained constant.

Training modifications within the basic SEAL course, Basic Underwater Demolition/SEAL (BUD/S), have been implemented throughout the years. Some modifications are designed to include new tactics and techniques used by NSW, while other changes occur "because SEALs continually try to find better ways to do things."[7] However, the one underlying fact concerning BUD/S training that has remained constant is the large attrition of candidates throughout the forging process.

In former SEAL Lieutenant Dick Couch's 2001 book entitled *The Warrior Elite*, he states that fewer than 250 men complete BUD/S each year while Ranger school, an eight-week course, in comparison, awards approximately 1,500 Ranger Tabs a year.[8] While the numbers of men who make it through the SEAL training pipeline and earn the

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[6] Dick Couch, *The Warrior Elite: The Forging of SEAL Class 228* (New York, Three Rivers Press, 2001), 2.

[7] Couch, *The Warrior Elite: The Forging of SEAL Class 228*, ix.

[8] Couch, *The Warrior Elite: The Forging of SEAL Class 228*, 1.

right to wear the trident does fluctuate, overall, the graduation rates remain low while the SEALs of today participate heavily in the ongoing U.S. battle against global terrorism.

Despite historically low graduation rates of BUD/S students, the number of SEAL teams has grown over four times the size of the original force of two teams commissioned by President Kennedy. NSW's ability to maintain this force in terms of a healthy force structure capable of withstanding fluctuating retention rates and combat losses drives NSW's continued pursuit and interest in maximizing the output of the training pipeline. The constant variable in this pursuit is that the quality and standards of the forging process will not be sacrificed to increase numbers.

B. RECENT TRAINING PIPELINE UPDATES

"The growth goal of the [NSW] community is to balance retention and production."[9] Retention rates improved after 2004 due to an increase in monetary bonuses for staying in the service; however, the average growth rate seen was only 11 percent. In 2006, the Seal Production Process Improvement (SPPI) working group was established to evaluate and guide NSW's process of increasing production outputs necessary to work in conjunction with retention efforts to grow/maintain the SEAL force.[10] The establishment of the SPPI created a collaborative relationship between Commander Naval Special Warfare Command (CNSWC), Commander Naval Recruiting Command (CNRC), and the Commander Naval Services Training Command. Changes resulted from this collaborative effort.

The CNRC established a Special Operations Mentor program. In this program, each naval recruiting district has a retired SEAL, Explosive Ordnance Disposal (EOD) or diver to assist recruits in the delayed entry program (DEP) in their level of Computerized Special Operations Resiliency Test (C-SORT). The C-SORT tests for mental toughness, and when combined with the physical testing scores, predicts which prospective student

[9] NSW Center Public Affairs, "Growing the Force," *Ethos 8* (2010), http://www.sealswcc.com/navy-seals-ethos-magazine.aspx, 17.

[10] NSW Center Public Affairs, "Growing the Force," 17.

will drop out of training before the completion of Hell Week.[11] The accuracy of the C-SORT's predictions is stated as a 97.5% confidence level.[12]

Navy Boot Camp, located in Great Lakes, IL, also changed for SEAL candidates as a result of SPPI initiatives. SEAL candidates are now placed in special recruit training divisions with other prospective candidates. These special divisions undergo more physical training than the standard Navy recruit division. After boot camp, the candidates attend an eight-week long Naval Special Warfare Preparatory School also located in Great Lakes that continues the physical preparations of the candidates, as well as introduce them to SEAL culture.[13]

After leaving Great Lakes, the students then travel to Coronado, CA, the home of BUD/S. While the training pipeline in BUD/S has not changed dramatically, NSW has implemented structural updates to increase the output of students.[14] While emphasizing the crucial physical and mental toughness required to complete SEAL training, improving the physical preparedness of a BUDs candidate, and attempting to reduce the unnecessary physical injuries at BUDs by improving the infrastructure, along with schedule shifts to reduce the number of Hell Week Drop on Requests (DOR), can improve the success rate of the training, it overlooks the connectivity of the recruit to NSW as a contributing factor in the probability of successful completion of the SEAL training pipeline.

[11] Hell Week is a 5.5 day long continuous training evolution in Phase I of BUD/S in which students, divided into small units called boat crews, are constantly kept on the move, and allowed only 3–4 total hours of sleep, and must carry their inflatable boat small (IBS) wherever they go. Open sores caused from constantly wet, sandy, and muddy uniforms chafing the skin are common. The mental ability to push through the misery of the training and continue on is a student's only chance at surviving this training hurdle. This evolution is the end of the journey for many men, not from injury, but from allowing the mind to succumb to the physical plight of the body.

[12] NSW Center Public Affairs, "Growing the Force," 17–18.

[13] NSW Center Public Affairs, "Growing the Force," 17–18.

[14] Curriculum and standards left unchanged; however, improvements in the infrastructure of BUD/S that does not impact the standards were implemented. An ocean-side galley was constructed to cut down on some of the running not involved with training, medical facility and staff was increased to handle larger student body on a timely fashion, and class schedules were shifted to warmer months to take advantage of the higher success rates seen in warmer months compared to winter classes.

C. SOCIAL MOVEMENT RECRUITMENT AND RETENTION

This thesis argues that the recruitment and retention of Navy SEALs, which is a high cost and risky activity, is analogous to the recruitment and retention of individuals to high-risk social movements. Consequently, the research of scholars who have studied social movement recruitment to glean insights as to how to improve the recruitment and retention of Navy SEALs is examined.

A substantial portion of social movement research has focused on the recruitment and retention of individuals to social movements.[15] Within this body of literature, questions pertaining to the reasons why one individual will participate in a particular organization/movement while similar people will not participate is viewed from varying perspectives. One approach to this question of recruitment susceptibility is to emphasize the individual (attitudinal fit) as the dominant factor in a person's decision to participate in a movement. A second approach to the question of "recruitment variances" is to emphasize the pre-existing structural or interpersonal ties a recruit has with a movement as the dominant factor in that recruit's decision to participate or not participate.[16] The individual (psychological emphasis) and interpersonal ties approaches to answering movement theory recruitment questions are not diametrically opposed. While they emphasize different causal relations to explain "differential" (i.e., variation) in recruitment, they are not entirely independent from the other either.

Social movements rely on the ability to recruit for the purpose of acquiring a large enough density of members to leverage mobilization. High risk movements, in particular, require extensive and selective recruitment due to the high levels of personal risk/cost associated with such activist activity, which is perhaps best illustrated by Doug McAdam's analysis of recruitment to the 1964 Freedom Summer project. In his analysis,

[15] Doug McAdam and Ronnelle Paulsen, "Specifying the Relationship Between Social Ties and Activism," *The American Journal of Sociology* 99, no. 3 (November 1993): 640.

[16] McAdam and Paulsen, "Specifying the Relationship Between Social Ties and Activism," 642–645.

he found that role social ties play a key role in the recruitment and participation of members.[17]

The Freedom Summer project was an effort by civil rights activists in 1964 to help black voter registration in Mississippi, and offer educational opportunities not available to blacks in Mississippi's segregated school system. The project brought national media attention to the ongoing civil rights issue in Mississippi when three volunteers, two white males and one black male, were kidnapped and killed. The majority of the volunteers in this project were affluent, northern, white college students recruited from campuses in the North East of the United States. Applications for the project were extensive in the scope of questions asked. These applications, and the records kept by the movement, enable researchers to determine the status of an applicant in the project, either as a participant, or a withdrawal. A withdrawal is defined as an applicant who was accepted into the program but did not participate in the project.

McAdam's analysis of Freedom Summer yielded a model of recruitment for high-risk/cost activism. It emphasized "the importance of both structural and individual motivational factors in high-risk/cost activism [and contends] that an intense ideological identification with the values of the movement disposes the individual toward participation, while a prior history of activism and integration into supportive networks acts as the structural "pull" encouraging the individual to make good on his or her strongly held beliefs."[18] Specifically, McAdam found that "participants consistently score higher than withdrawals on both organizational and interpersonal items measuring integration into activist networks."[19] More interestingly, he discovered that although both participants and withdrawals had attitudinal affinity towards the project, that "having a close friend [strong tie] participate or withdraw from the project did, in fact affect the

[17] Doug McAdam, "Recruitment to High-Risk Activism: The Case of Freedom Summer," *The American Journal of Sociology* 92, no. 1 (July 1986): 64–99.

[18] McAdam, "Recruitment to High-Risk Activism: The Case of Freedom Summer," 64.

[19] McAdam, "Recruitment to High-Risk Activism: The Case of Freedom Summer," 87.

subject's chances of participation, while the presence or absence of weak ties to other applicants seems to have had little impact in most cases."[20]

Social movement theory literature is relevant to the study of the NSW recruiting network because of the similar hardships faced by NSW recruits as compared to those involved in high risk movements. Participation in high risk activism comes with increased personal risk as compared to participation in or support for low risk activist movements. Becoming a member of an elite military force like the SEALs also places higher personal risks/demands on a military member compared to the larger more conventional military units. Interestingly, literature utilizing either of these methods on an organization, such as NSW, is peculiarly absent; however, the similarities of the personal costs associated with high risk/cost activism compared to the costs/hardships of SEAL training allows the author to draw upon the SMT literature of high risk activism movements to establish models of recruitment for NSW.

Ever since Mark Granovetter's study of how job information diffused through society,[21] social scientists have drawn a distinction between weak and strong ties. Strong ties are those that exist between two individuals who repeatedly interact with one another (e.g., close friends). Weak ties are those that exist between individuals who interact with one another rarely or on an occasional basis (e.g., acquaintances). Granovetter discovered that weak ties are important because they enable the diffusion of information across dissimilar socio-demographic barriers, while strong ties are important because they can provide much needed social support in times of uncertainty and change.

Strong ties also appear to play an important role when it comes to recruiting individuals to high risk activism. In a follow up study of the Freedom Summer project, McAdam and Paulson found that "prior ties… appear to encourage activism only when they (a) reinforce the potential recruit's identification with a particular identity and (b) help to establish a strong linkage between that identity and the movement in question. When these processes of identity amplification and identity/movement take place,

[20] McAdam, "Recruitment to High-Risk Activism: The Case of Freedom Summer," 87.

[21] Mark Granovetter, "The Strength of Weak Ties," *The American Journal of Sociology* 78 (1973): 1360–80.

activism is likely to follow."[22] More specifically, they found that the closer the ties an applicant had to the movement, the less likely they were to be a "no show" and, in turn, the more likely they would participate. This discovery suggests that the existence of close prior ties between a potential BUD/s candidate and NSW will directly influence that individual's probability of being successfully recruited by NSW.

Not only do strong ties play an important role in the recruitment of individuals to high risk activism, they also decrease the likelihood that someone will leave or defect from a movement. For example, Popielarz and McPherson discovered that for a variety of reasons, "strong" or central members of an organization are less likely to defect than those whose ties are weaker and less central.[23] They found that "[v]oluntary organizations lose fastest those members who are either atypical of the group… or subject to competition from other groups."[24] Stark and Bainbridge's study on recruitment and retention uncovered similar dynamics.[25] They found that individuals who did not have close or strong ties to a group's leadership were more likely to leave the group than those who did. Why? One possible factor is that people with strong ties to a movement may face sanctions if they leave, which is indeed what Ellison and Sherkat discovered in their study of the rural, black church.[26] They uncovered evidence that suggested that participation by rural southern Blacks "in congregational activities [are] shaped to a

[22] McAdam, and Paulsen, "Specifying the Relationship Between Social Ties and Activism," 663.

[23] McAdam, and Paulsen, "Specifying the Relationship Between Social Ties and Activism," 698–720.

[24] Pamela Popielarz and Miller J. McPherson, "On the Edge or In Between: Niche Position, Niche Overlap, and the Duration of Voluntary Association Memberships," *The American Journal of Sociology* 101, no. 3 (November 1995): 698–720. This theory may also help explain why the NSW community is lacking in ethnic diversity. Popielarz and McPherson focus on the position an individual holds within the socio-demographic boundaries of a voluntary association as the determining factor in the decision of an individual to join/participate/or not participate in a voluntary organization/group/movement.

[25] Rodney Stark and William Sims Bainbridge, "Networks of Faith: Interpersonal Bonds and Recruitment to Cults and Sects," *The American Journal of Sociology* 85, no. 6 (May 1980): 1376.

[26] Christopher G. Ellison and Darren E. Sherkat, "The Semi-involuntary Institution Revisited: Regional Variations in Church Participation Among Black Americans," *Social Forces* 73, no. 4 (June 1995): 1415–1437.

considerable degree by social norms and expectations."[27] In particular, they found those with social ties to a church were far less likely to disaffiliate than those who without these ties.

While their focus was on the rural, southern black church, their findings are applicable to other settings. Indeed, in this thesis, the author argues that NSW recruits with a strong tie to NSW face similar social costs. If a NSW recruit quits, he risks incurring social sanctions from his family and friends. Consequently, it is to be expect that NSW recruits with strong ties to NSW (e.g., a family member or friend who is or was a Navy SEAL) will be less likely to defect than those who do not have such ties.[28]

This research follows along this SMT path while also utilizing geospatial mapping techniques to illustrate better the boundaries of the social space that NSW recruits represent. While many variables are involved with recruiting, even more variables are associated with making it through BUD/s. The emphasis of this thesis is to determine what variables outside the physical realm (just not tough or fit enough) to make it through BUD/s have had the greatest impact on a recruit's ability to make it through training. The determinations of this approach can then be continued to the targeted recruitment of individuals who are both suited and situated to become future SEALs. This analysis draws on a dataset that contains over 10,000 BUD/S recruits and includes information that can be utilized in ways similar to how McAdam and Paulsen analyzed recruitment to Freedom Summer.

[27] Ellison and Sherkat, "The Semi-involuntary Institution Revisited: Regional Variations in Church Participation Among Black Americans," 1416.

[28] While the author is not arguing that a growing warrior sect exists in America, he believes the data will indicate that the proportion of candidates with strong familial ties to NSW and perhaps any other American special operation organization make it through the training pipeline more than candidates with no familial ties to NSW or special operations in general.

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III. STATISTICAL ANALYSIS: DATA, METHODS, MEASURES, AND FINDINGS

A. METHODS AND DATA

To test the author's hypothesis that individuals with strong ties are more likely to complete the training pipeline, he employs standard and ordered logistic regression analysis. More precisely, a standard logistical regression model is estimated, which is designed "for determining whether each of a set of independent variables has a unique predictive relationship to a dichotomous dependent variable,"[29] for testing whether strong ties increase the likelihood that a candidate will complete the training pipeline. The author also estimates an ordered logistical regression model, which is designed to determine whether the independent variables are predictive of an ordered dependent variable,[30] to test not only whether strong ties increase the likelihood that a candidate will complete the training pipeline, but also whether they increase the likelihood that a candidate will complete more phases of the training pipeline. The Stata statistical package is used to estimate both models.[31]

Similar to the data McAdam used in his research of the 1964 Mississippi Freedom Summer project, the BUD/S-PRIDE database affords the ability to compare systematically the characteristics of all candidates collected by the Naval Special Warfare Center (NSWC) before the start of training. Similar to the applications filled out by those wanting to volunteer for the Freedom Summer project, the data on the BUD/S candidates, filled out when the students arrive on site for training, include demographic information, such as age, race, education level, hometown, home state, and so forth. Along with the demographic information, the data include information stating how the candidates heard of the program, influences, test scores (physical and mental), and the status of the student

[29] The Measurement Group Archives, "Definitions: Logistic Regression," (n.d.), http://www.themeasurementgroup.com/Definitions/logistic_regression.htm.

[30] Statistic Solutions, "Ordinal Regression," (n.d.), http://www.statisticssolutions.com/resources/directory-of-statistical-analyses/ordinal-regression.

[31] StataCorp., *Stata Statistical Software: Release 11* (College Station, TX: StataCorp LP, 2009).

in training. Coding the data to run a logistical regression model was essential in ascertaining if prior ties impact a student's chances at success in training.

B. MEASURES

1. Dependent Variable (Logistic Regression)

As noted above, the dependent variable (DV) when estimating a logistic regression model is whether a SEAL candidate successfully completes the training pipeline to become a SEAL or falls short of this goal somewhere along the process. By definition, this DV is dichotomous in nature. Within the robust data compiled by NSW on prospective SEALS who reported to BUD/S, the DV was derived from the status variable, which charts the progress of each candidate through the NSW pipeline. It indicates what phase a student is currently in and how a student's progression ended: graduation, DOR (Drop on Request from training), performance drop, performance roll, medical drop, and medical roll. Those candidates having either the "under instruction" code "UI," the NA code, Null code, or the Physical Training Rehabilitation and Remediation code "PTRR" are not given a zero or one. Not knowing from the provided data if the students with these status column indicators finished training forced the author to exclude them from the model.

2. Dependent Variable (Ordered Logistic Regression)

The DV for the ordinal regression model differs slightly from the dichotomous DV in the logistic model. In this thesis, it measures how far the candidates survived the training pipeline sequence (including but not limited to whether they successfully completed the training). The breaks or cuts of this ordered variable follow the basic flow of the training pipeline and are presented in Table 1. Three of the five fall between the distinct three separate phases of BUD/S. The remaining two follow the SEAL training pipeline through advanced training known as SEAL Qualification Training (SQT). "The first category is considered as the lowest category and the last category is considered as the highest category."[32] Students who did not make it through Hell Week are assigned a

[32] Statistic Solutions, "Ordinal Regression."

0. Candidates who survived Hell Week but did not finish the first phase received a value of 1. The students who dropped out in second phase of BUD/S were assigned a value of 2. Those who dropped out in the third phase and fourth phases received values of 3 and 4, respectively. In addition, the students who successfully completed the training pipeline were given a value of 5. Since it was impossible to determine at what stage some of the students dropped out of the pipeline, they could not be included in the ordered logistic model. Hence, the number of cases in the ordered logistic model is fewer than in the standard logistic model.

	Cut 1	Cut 2	Cut 3	Cut 4	Cut 5
0	1	2	3	4	5
Left training before Hell Week	Completed Hell Week but not 1st Phase	Completed 1st Phase but not 2nd Phase	Completed 2nd Phase but not 3rd Phase	Completed 3rd Phase but not SQT	Completed Training pipeline

Table 1. Position of the Ordered Logistic Regression Cuts in the SEAL Training Pipeline.

3. Key Independent Variables

The key independent variables are strong ties and weak ties. Mark Granovetter argues that the most "intuitive notions of the "strength" of an interpersonal tie should be satisfied by the following definition: the strength of a tie is a (probably linear) combination of the amount of time, the emotional intensity, the intimacy (mutual confiding), and the reciprocal services which characterize the tie."[33] However, as David Krachardt has noted, while Granovetter's work distinguishes between the strength of ties, in practice, it has been measured many different ways: reciprocated or unreciprocated nominations, the recency of the contact, and the labels used to describe such ties (e.g., friend, relative, neighbor, and so forth).[34]

[33] Granoveter, "The Strength of Weak Ties."

[34] David Krackhardt, "The Strength of Strong Ties: The Importance of Philos in Organizations," in *Networks and Organizations: Structure, Form, and Action*, ed. Nitin Nohria, and Robert Eccles (Boston: Harvard Business School Press, 1992), http://www.andrew.cmu.edu/user/krack/documents/pubs/1992/1992%20The%20Strength%20of%20Strong%20Ties.pdf, 217.

How a candidate indicated that he heard of the SEALs to identify the presence or absence of a prior tie to special operations and/or NSW and whether they were weak or strong was used. While removing all subjectivity within this critical phase of assigning codes for strong, weak, or no ties is impossible, the following discussion describes how every determination was made.

Strong ties were considered to exist when the student indicated that a family member or friend is or was a SEAL, Underwater Demolition Team (UDT) member, or a member of another military branch special operation force. Strong ties were not considered to exist when candidates indicated that a family member or friend is or had attended BUD/S (i.e., they attended but apparently did not complete the training) because it was impossible to determine their strength. Therefore, they were coded as a weak tie.[35] Responses that indicated the candidates merely heard about the SEALs from parents or friends were also coded as weak ties because while no indication exists as to whether the family member or friend had any actual connection to NSW, the inferred salience of the familial or friendship tie suggest the probability that at least a weak tie exists.

Responses indicating that the candidate heard about the SEALs from an organization, at a one-time event, from Naval personnel (within the Navy Recruitment process), or during a prior Naval deployment(s) alongside a SEAL detachment were coded as an absence of a tie. Stating that an organization is how someone heard of the SEALs could imply a number of things with regards to ties to NSW. While some youth organizations, such as the Sea Cadets, have in the past visited the BUD/S compound on many occasions, it is not possible to infer from the data that a student responding in this manner has ever met a SEAL let alone form a tie with one. A one-time event is exactly what it sounds like. Instead of trying to guess the salience associated with the event,

[35] While identifying strong ties through labels is clearly possible, to identify a weak tie within the data using labels introduces a minimal amount of subjectivity. To minimize this subjectivity, decisions are based on a logical examination of the data through the view point of a SEAL with the advice of an expert in the field of SMT. As mentioned earlier, students responding that they had a family member or friend who either attended or is attending BUD/S are given a weak tie code. The reasoning behind this classification is twofold: one, if the family member or friend successfully completed training, the student had the opportunity to respond as having/had a family member or friend within NSW, and two, if the candidate's contact is still within the training pipeline, the ability of this tie to influence the student could be negative, as well as positive, depending if the tie makes it through training.

avoiding subjectivity, the measure of the tie is based on frequency of contact. Past deployments alongside a SEAL unit does infer the possibility of interaction between the student and a SEAL; however, the ability to ascertain the amount of interaction, if any, is impossible. Therefore, these are coded as “no tie” to avoid over inflating their importance with speculative guesses. Responses indicating that they heard of the SEALs from a person as part of the naval recruiting process, including individuals who heard about them at Boot Camp, are coded as having no tie because of the nature and timing of the contact with the prospective BUD/S candidate. Simply put, if an individual is already going to a Navy recruiting station or is in Boot Camp, and they list one of these individuals as how they heard of the SEAL Teams, being a SEAL is secondary to being in the Navy.

An “absence of tie” code is also given to responses that indicated that the candidate learned about the SEALs from (1) a book, paper, or article, (2) childhood toys like GI Joe, or (3) from the movies. Responses that that indicate the student does not remember when hearing of the teams or from some other unspecified source were also coded as “no tie.” Table 2 summarizes how these responses in the hear column of the BUDS-PRIDE data are coded in this research.

# Code	Translation	Strong Tie	Weak Tie	No Tie
0	OTHER. SPECIFY			X
1	NAVY RECRUITER AT LOCAL RECRUITING STATION			
2	CLASSIFIER AT MEPS STATION			
3	TELEVISION/MOVIES			X
4	MAGAZINE/NEWSPAPER			X
5	RELATIVE IS A SEAL	X		
6	FRIEND IS A SEAL	X		
7	FRIEND ATTENDED/ATTENDING SEAL TRAINING		X	
8	RELATIVE ATTENDED/ATTENDING SEAL TRAINING		X	
9	DIVE MOTIVATORS AT RECRUIT TRAINING CENTER			X
10	NAVY PARACHUTE TEAM DEMONSTRATION			X
11	COMMUNITY EVENT (PARADE/DISPLAY)			X
12	SEAL PRESENTATION AT YOUR SCHOOL			X
13	SEALs DEPLOYED WITH YOUR UNIT			X
14	LINK, USN ENL PERSONNEL DISTRIBUTION PROFESSIONAL BULLETIN			X
15	PROSPECTIVE, USN OFF PERSONNEL DISTRIBUTION PROFESSIONAL BULLETIN			X
16	NAVY NEWS SERVICE MESSAGE			X
17	NAVY TIMES			X
18	NAVY/MARINE CORPS NEWS			X
19	LOCAL BASE PAPER (i.e. COMPASS)			X
20	TOURED THE SEAL TRAINING FACILITY WITH JROTC			X
21	NAVAL SEA CADET CORPS			X
22	FAMILY TOLD ME ABOUT SEALS		X	
23	FROGMAN BOOK / NOVEL			X
24	SPECIAL WARFARE COMMUNITY (FT BENNING, EOD)	X		
25	THROUGH FRIENDS, WORD OF MOUTH			X
26	FAMILY OR FRIEND IS IN ANOTHER SPECIAL FORCES OUTFIT	X		
27	FAMILY OR FRIEND WAS IN UDT	X		
49	DON'T EVEN REMEMBER			X
50	G.I. JOE TOYS AS A YOUTH			X

Table 2. Tie Strength Classifications of Entries within the "Hear" Column of the BUDS-PRIDE Data

4. Control Variables

The author controls for the effects that a strong or weak tie has on a prospective SEAL candidate's ability to complete the training pipeline with a series of standard demographic factors, such the age of the candidate upon arrival, race, marital status, and whether the candidate has dependents/children. He also controls for whether the candidate previously played a "strong sport." According to a 2009 Naval Special Warfare Recruit Directorate (NSWRD) study, conducted by GALLUP Consulting, "those [students] participating in sports such as water polo, triathlon, lacrosse, boxing rugby, and swimming as well as those participating in activities such as mountain biking, woodworking, mountain/rock climbing, and hunting … succeed [at BUD/S] disproportionately."[36] Thus, the author includes a variable indicating whether a candidate

[36] Naval Special Warfare Recruiting Directorate, *Final Research Findings* (San Diego, CA, 2009).

participated in any of the following sports: water polo, triathlon, lacrosse, boxing rugby, and swimming. Also controlled for is the level of a candidate's education. Using a high school diploma or the equivalent as a reference category, the author created two dummy variables indicating whether a candidate had a high school diploma and some college experience, or had earned a four-year college degree or more.

Another variable included in the models captures the affinity the students expressed towards NSW and is labeled "lifelong affinity." The assumption lying behind this variable is that all the students must have a certain degree of affinity towards the SEALs or they would not have attempted the training. Therefore, a more precise measure of affinity was needed to control for this factor. The measurement for this control variable is the strength of the affinity. Student responses indicating a strong or lifelong affinity were given a score of one, while those not responding in such a strong manner were coded as zero. Table 3 lists all the entries within the "influence" column and how they are coded.

Code	Translation	**Life Long Affinity**
AA	WANTED TO BE APART OF AN ELITE TEAM	
AB	WANTED A CHALLENGE IN LIFE / TO MYSELF	
AC	WANTED TO SERVE MY COUNTRY	
AD	DIDN'T WANT TO RIDE A SHIP IN THE NAVY	
AE	ENJOY DOING THE THINGS A SEAL DOES	
AF	IT'S ALL I EVER WANTED TO DO	**X**
AG	FATHER DID IT!	
AH	TEAMWORK OF THE SEAL TEAMS	
AI	PERSONAL GOAL	
AJ	LIFE LONG DESIRE TO BECOME A FROGMAN	**X**
AK	TO BE A MEDTECH FOR THE SEALS	
AL	SEALS ARE THE BEST	
AM	TO PERFORM NAVSPECWAR OPS AS A SEAL	
AN	TO BETTER MYSELF / SELF ACHIEVEMENT	
AO	A LONG STANDING ASPIRATION/DREAM	**X**
AY	IT IS WHAT I WAS BORN TO DO	**X**
AZ	ALL OF THE ABOVE	**X**
NK	NOT KNOWN	
OT	OTHER: SPECIFY	

Table 3. Lifelong Affinity Entries in the "Influence" Column of BUDS-PRIDE Data

A final series of dummy variables, ones that identify the region of a candidate's hometown, are included in the models as controls because the 2009 NSWRD study identified "…the regions of New England (ME, VT, NJ, MA, CT, RI), West North Central (ND, SD, NE, KS, MO, IA, MN) and the Pacific (CA, OR, WA) as the regions most highly correlated with success.[37]" The author follows the divisions used by the U.S. Census Bureau (Table 4) to create the dummy variables in the model by using the U.S. Census Bureau's Division 9 (i.e., Alaska, California, Hawaii, Oregon and Washington) as the reference category.

[37] Naval Special Warfare Recruiting Directorate, *Final Research Findings*.

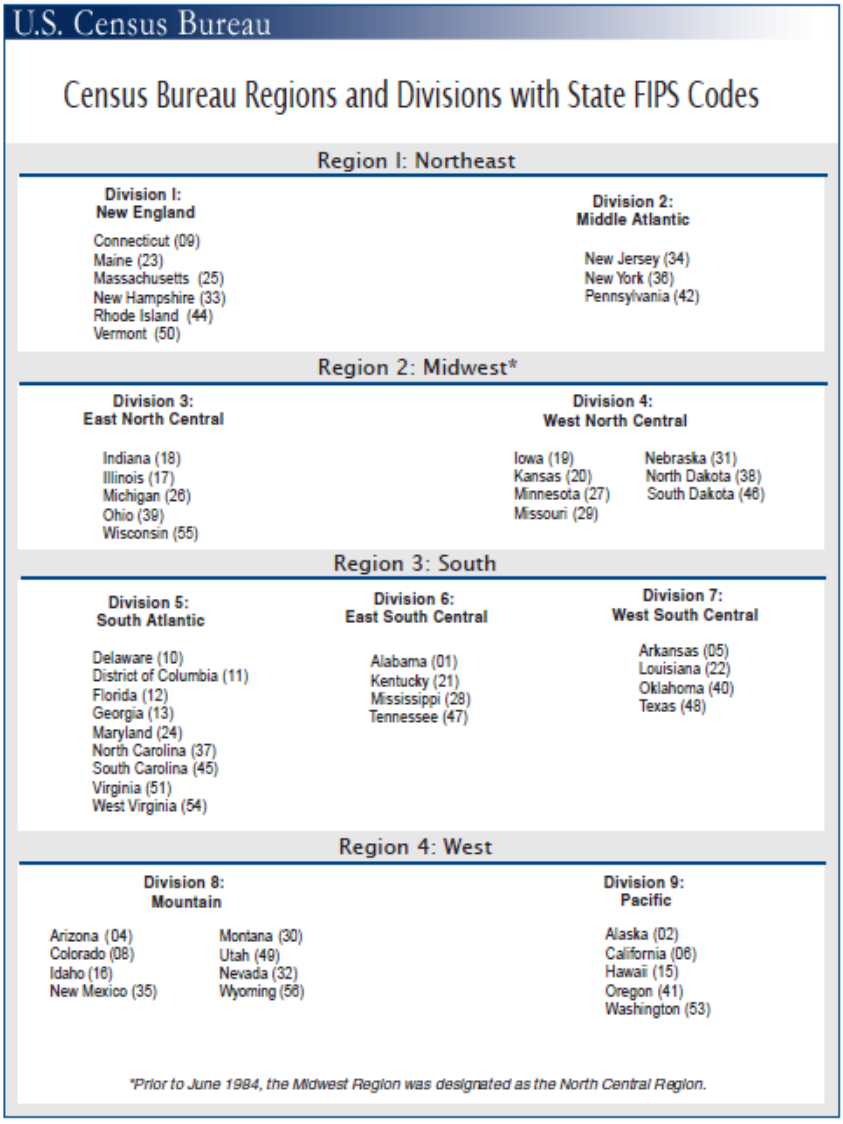

Table 4. U.S. Census Bureau Regions and Divisions Chart[38]

C. FINDINGS

As shown in Table 5, both the logistic and the ordered logistic regression model provide support for this thesis's hypothesis that a strong tie to NSW increases the likelihood that a candidate will successfully complete or progress further through the SEAL Training pipeline. It does not, however, provide support for the hypothesis that weak ties have a similar effect. It is important to note that while the purpose of this

[38] U.S. Census Bureau Official Website, (n.d.), http://www.census.gov/geo/www/us_regdiv.pdf.

research is to identify the importance of strong ties in aiding a candidate in successfully completing the initial training pipeline required to become a SEAL, it does not attempt to definitively answer "why" this may be so (although it does offer some suggestions—see Chapter II); research on this subject continues in the world of social scientists. The importance of this research is not why strong ties influence success in training, but in proving that it happens. Knowing this fact allows NSW, and any other special operations branch within the U.S. military, to implement a sustainable community engagement approach to recruiting utilizing proven assets—current and former teammates.

Looking at the results of the logistic regression model (Table 5), it can been seen that students with a strong tie, either to NSW or another special operations force within the U.S. military, are 1.27 (i.e., e0.239) more likely than students without such a tie to make it through the training pipeline. Weak ties, however, do not appear to make a difference as the coefficient is negative but statistically insignificant. Looking at the results of the ordered logistic regression model, note that a strong tie increases the likelihood that a candidate will progress further in the training program than those without a strong tie. Once again, weak ties do not appear to have an impact; the coefficient is negative and statistically insignificant.

	Logit	Ordered Logit
Strong ties	0.239**	0.243*
Weak ties	-0.098	-0.034
Strong sport (1 = yes)	0.368**	0.350***
Marital status (1 = married)	-0.107	0.009
W/Dependents	-0.038	-0.207
Life Long affinity (1 = yes)	0.339***	0.337***
Education some college[1]	0.005	-0.024
Education college[1]	0.613***	0.524***
Ethnic White[2]	0.076	0.002
Division 1: (U.S. Census) New England[3]	0.035	-0.002
Division 2: Middle Atlantic[3]	-0.202	-0.232*
Division 3: East North Central[3]	-0.029	-0.080
Division 4: West North Central[3]	0.147	0.026
Division 5: South Atlantic[3]	-0.561***	-0.594***
Division 6: East South Central[3]	-0.606**	-0.551**
Division 7: West South Central[3]	-0.290*	-0.422***
Division 8: Mountain[3]	-0.191	-0.305**
Division: Other[3]	-0.756	-1.064
Division: U.S. Territories[3]	0.273	0.249
AFQT2	0.318***	0.300***
Age arrived	-0.047**	-0.042**
Constant	-0.786*	
Constant (cut 1)		0.301
Constant (cut 2)		0.379
Constant (cut 3)		0.511
Constant (cut 4)		0.553
Constant (cut 5)		0.573
N	6,389	5,529
Log Likelihood	-2,979.23	-4,091.90
AIC	6,002.47	8,235.81
BIC	6,151.23	8,407.87

[1] Reference category = High School; [2] Reference = Non-white; [3] Reference = Division 9 (Pacific)
p < .05, ** p < .01, *** p < .001, two-tail test
Statistical significance estimated using bootstrapped standard errors

Table 5. Estimated Coefficients from Logit and Ordered Logit Models

As stated previously by NSWRD's Research Findings of 2009, the control variables, such as strong sport, AFQT scores equal to or greater than 78, and a college education were found to be significant indicators of individuals with a higher probability of success in SEAL training. The coefficient for the "strong sport" dummy variable indicates that participating in a strong support is positively associated with making it through training. Those candidates coded as having a "strong sport" have an observed odds ratio of 1.44 (e0.368) and 1.42 (e0.350), respectively, of completing training or lasting longer in the training pipeline over candidates who did not, which lends additional support to the findings of the NSWRD 2009 report.

Having a lifelong affinity for the SEALs appears to make a difference as well. Candidates coded with "lifelong affinity" are 1.40 times more likely (e0.339 and e0.337) to complete and last longer in the training pipeline than those candidates without such an affinity. This finding also supports the findings of the NSWRD 2009 report. Another variable believed to show a positive influence in a person's ability to make it through training is education level. The findings indicate that a candidate with a college education is more likely to complete training or last longer in the training than a candidate with only a high school education. Having some college education, however, does not appear to make a difference.

With regards to whether a candidate's geographic location influences the ability to make it through training the results are mixed. Looking at the logistic regression model, candidates from the South Atlantic, East South Central, and West South Central regions are less likely to complete the training pipeline than candidates from the Pacific region (i.e., Division 9 that serves as the reference category in this thesis). Candidates from the other regions are neither more nor less likely to complete the training successfully than those from the Pacific region. The ordered logistic model paints a slightly different picture. It indicates that candidates from the South Atlantic, East South Central, and West South Central regions, as well as those from the Middle Atlantic and Mountain regions, do not survive as long in the training pipeline as those from the Pacific region. Candidates from the other regions are neither more nor less likely to last longer in the training pipeline than those from the Pacific region. While the results for this

geographic variable indicate certain geographic areas have less success in supplying successful SEAL candidates as other regions, this research is in no means calling for a shift in SEAL recruitment efforts based on geographic location. Further research is needed to shed light on why certain areas produce more SEALs.

The results also indicate that AFQT scores matter in terms of a candidate's likelihood of successfully completing the training. Candidates with a score of 78 or above are 1.37 (e0.318) times more likely to complete the training and 1.35 (e0.300) times more likely to last longer in the training pipeline than those with scores below 78. Of course, AFQT scores do not drive recruitment efforts because the score is not known until someone has already started the entry process into the Navy. Nevertheless, while this test score cannot be used to identify good recruits prior to a candidate starting the Navy accession process, it can be assumed that the higher an education level attained by a potential candidate is, a higher AFQT score should be produced. Therefore, a potential candidate's level of education should receive more attention in developing targeted recruitment efforts since education levels are identifiable before a potential candidate begins the entry process into the Navy.

A common belief within NSW is that a candidate's age plays a significant factor in the ability to succeed through the training pipeline. For example a candidate may be considered too young or too old to cope with both the mental and physical demands of training. The 2009 NSWRD report states, "success is most common at an arrival age of 23–25 years old."[39] The findings in this research are consistent with the findings of 2009, which show that older candidates are less likely to complete the training or to last longer in the training process than younger candidates.

Finally, it is worth noting that the coefficient for ethnicity is statistically insignificant in both the logistic and ordered logistic models, which suggests that race does not matter in terms of how well a candidate performs in the training pipeline. Thus, recruiters should not feel inhibited to create a more diverse force, which is a function of NSW's ability to market itself within diverse communities.

[39] Naval Special Warfare Recruiting Directorate, *Final Research Findings*.

D. CONCLUSION

Through the use of two statistical models that controlled for a number of important factors, support was found for this thesis's hypothesis that SEAL candidates with strong ties to the SEALs community improve their chances of completing the training. The results are statistically sound and the process repeatable. The key variable of a strong tie is clearly defined within this work, and structured to fit within the accepted social movement theory parameters. It is safe to say without hesitation that strong ties matter.

IV. GEOSPATIAL ANALYSIS

A. INTRODUCTION

The inclusion of geospatial analysis within this thesis is to provide NSW with clear depictions of the recruit network to afford it the capability to direct recruitment efforts in a precise effective manner. Originally, the main reason geospatial analysis was included in this research is its ability to identify and illustrate clusters, and patterns regarding the key variable of strong ties. The dataset on the recruits enables a map of the students identified with strong ties to be created. However, the BUDS-PRIDE data do not identify the location of the individual who is the candidate's strong tie. A second dataset is necessary. Unfortunately, NSWRD does not have the necessary information—the hometown and home state of retired SEALs required to geo-code the retired or legacy SEAL network—and the multiple attempts to gather this information from representatives of the retired SEAL community produced unsatisfactory results. Therefore, the purpose of this analysis shifted from supporting the key variable to the more broadened purpose of identifying recruit pools.

The work shift in the geospatial analysis towards identifying recruitment pools allows the various demographic characteristics found within successful SEAL candidates to be illustrated. To avoid creating map products that attempt to illustrate too much information, in terms of the recruit network, multiple maps—each with a limited focus—is presented. The map products, created by importing the BUD/S—PRIDE database into a commonly used geospatial program created by the Environmental Systems Research Institute (ESRI) called ArcMap, allows the key independent variable and the control variables from the regression models to be graphically depicted. Similar to the use of geospatial analysis by modern police forces to distribute their limited resources to hot spot crime areas, the maps of this research, and the incorporation of this methodology in NSW recruitment efforts, will give NSW the ability to direct its resources.

To pinpoint NSW recruitment efforts, two sources of knowledge are required. The first source of knowledge pertains to the SEAL recruits. NSW already has this

information, and if the student data are kept current and analyzed regularly, keeping abreast of trends within the attributes of successful candidates is possible. The second source of knowledge required by both this research and NSW to establish the geographic location of possible future SEAL recruit pools requires looking outside NSW data sources. To analyze the necessary geographic data concerning the demographic variables of successful SEAL candidates, the 2000 U.S. Census Bureau statistics, already in a GIS format and available for purchase from the ESRI Company, are utilized. The 2000 census data were used in this endeavor, because the year of this collection falls within the dates of the BUDS-PRIDE data utilized. Within the census data, the control variables of age and education are easily found. Combining the analysis of the BUD/S students with U.S. Census data can enable educated decisions to be made towards specific geographic areas—either areas with large or small numbers of successful graduates—depending on the NSW recruitment needs and goals at the time.

B. STUDENT DATA MAPS

In this section, the student information within the BUDS-PRIDE database is visualized. The only limiting factor presenting itself when visualizing map-based data is the accuracy of the datum itself. If the data are incomplete or inaccurate, the resulting map will be incomplete or inaccurate. Hence, the reason behind the abandonment of creating a map visualizing the retired/legacy SEAL network.

The student dataset, while complete, did require some reformatting, but the data was not contextually changed. Reformatting was necessary to fulfill formatting requirements of the ArcGIS program, and thus ensure the entire dataset is usable within this mapping program. An example of the type of data reformatting necessary to ensure all the information is acceptable within ArcGIS is changing entries of hometown names from all lower case or all upper case to case Proper (where the first letter is capitalized and the rest of the letters are in lowercase). Spelling errors in the city or town names also needed to be corrected to ensure all entries could be geo-located. If a place name is not spelled correctly or not in case Proper, the entry may not be matched by ArcGIS to any preexisting shape file. Another example of a typical reformatting issue is ensuring no

blank spaces before an entry in any Excel cell prior to importing this data into ArcGIS. This cleaning up of data, while not difficult, is time consuming and can be eliminated by following a strict data entry process.

The cleaning and coding of the data does not mean the context of the data has been changed. Coding variables simply breaks down the information found in a data column into distinct groups. For example, to show successful SEAL candidates on a map, the status column within the data needs to be divided so that successful completion of training can be distinguished from every other entry in the status column. The data are the same, but identifying and categorizing the attributes in the data allows them to be labeled and placed on a map. The reader should note that some of the following maps contain clustered data in which features are overlapping each other. The goal of this thesis is to deliver these maps as geo.pdfs so that the user may zoom in and toggle off layers at many map scales.

The first map, Figure 1, simply illustrates from where all the students, within the data provided by NSWRD, originate. Since the information available in the student data provides only a hometown and home state for a candidate, it is possible for multiple students to be identified with one dot, which presents a problem with being able to represent/identify how many students come from a particular location. To resolve this issue, the size of the color dot is designated to represent a specific count, or number of students from the same geographic location. In cases in which the provided data contained the necessary geographic information required for geo-location, students are represented in Figure 1.

The student data can be further divided. In Figure 2, the students are identified as either successful or unsuccessful. Successful students are identified with green dots; unsuccessful students are identified with red ones. The size of the dot, once again, corresponds with how many students are from a specific town or city. Figure 3 illuminates the census divisions, which produces the highest ratio of successful SEAL candidates to non-successful students. Since the overall purpose of this thesis is to enhance NSW's ability to target "good" recruit pools, the remaining maps, derived from the student database, depict the demographics of only the successful candidates.

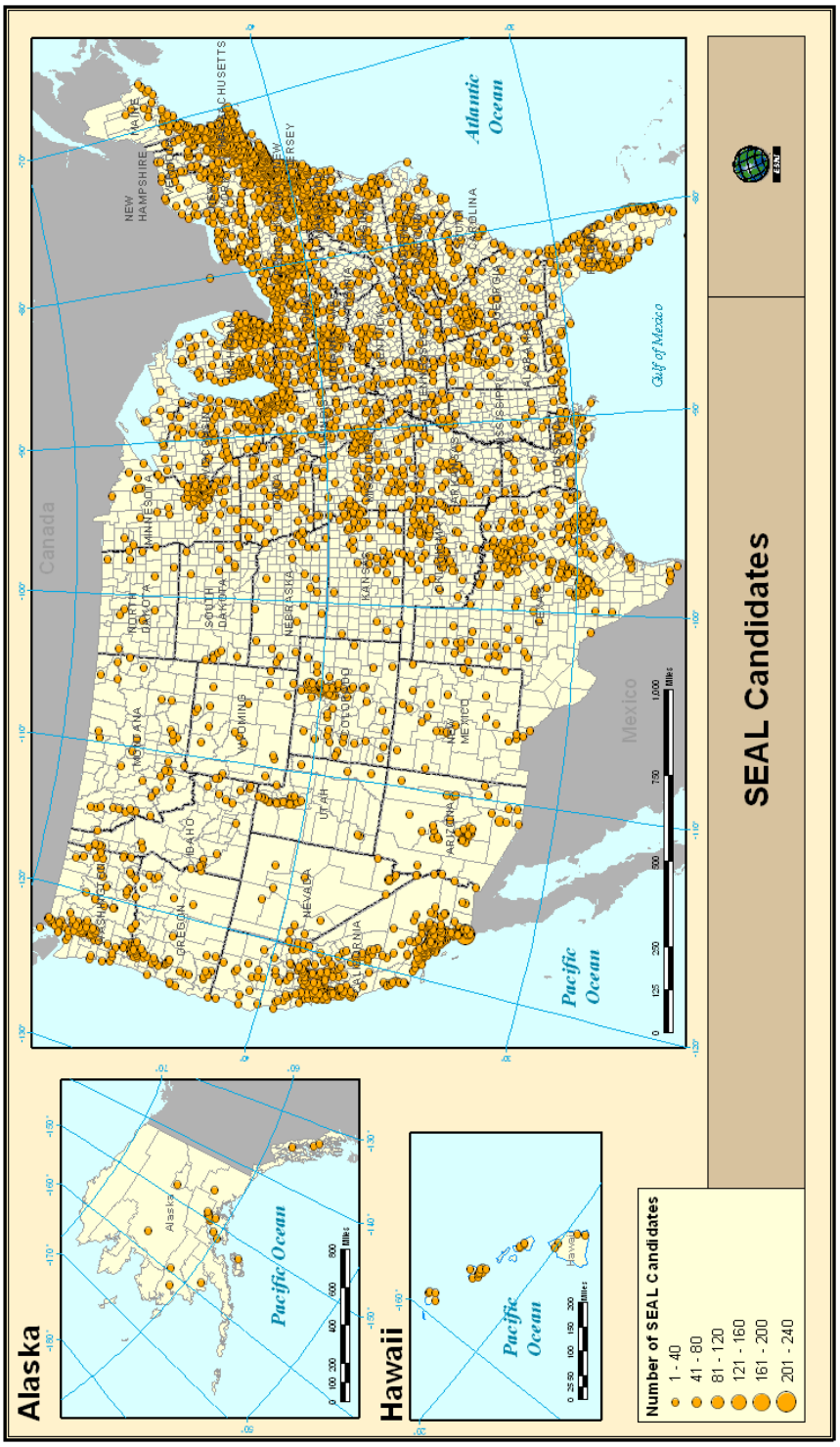

Figure 1. Location of All SEAL Candidates

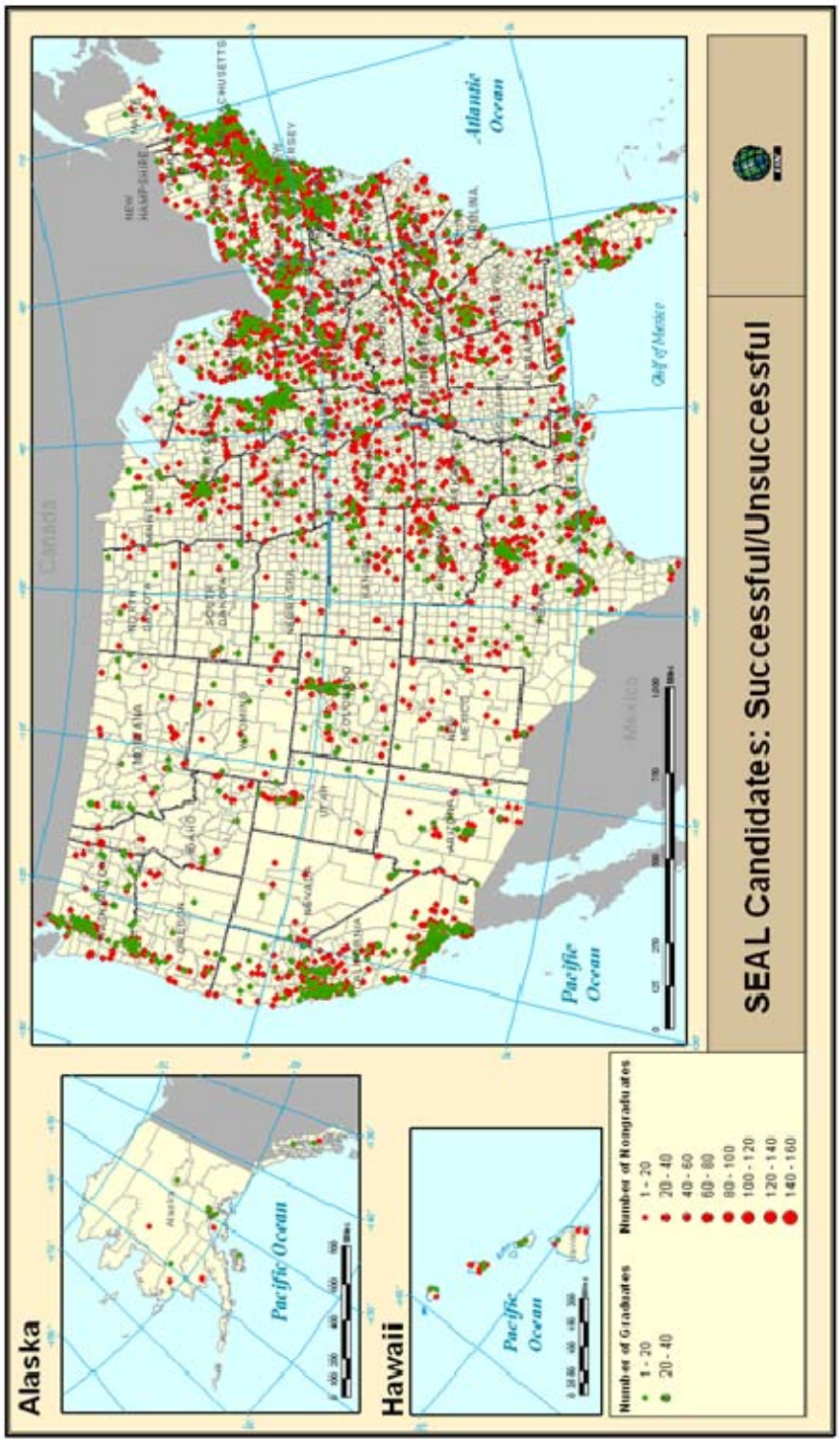

Figure 2. Successful/Unsuccessful NSW (SEAL) Students

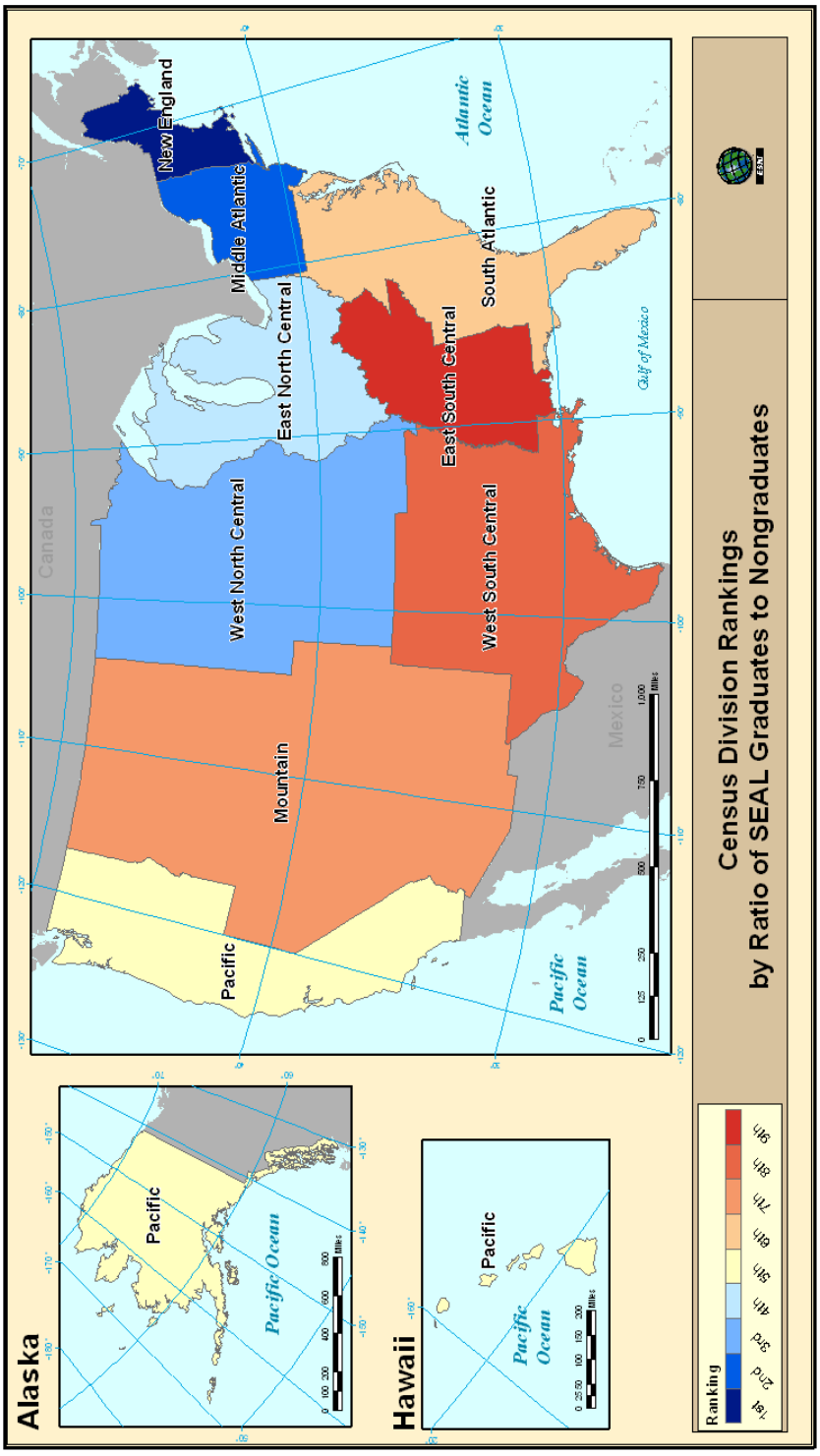

Figure 3. U.S. Census Division Rankings by Ratio of Graduates to Non-Graduates

Figure 4 illustrates the successful candidates with a prior "strong tie" to either NSW or another U.S. military special operations force. This map is an exception to the earlier statement of only illustrating the successful students. Figure 4 includes both successful and unsuccessful candidates with strong ties. The successful candidates with strong ties are identified by blue dots; unsuccessful candidates with strong ties are identified by yellow dots. The symbol's size represents a specific numeric range of students. The larger the dot, the more students represented. The reasoning behind the inclusion of the unsuccessful candidates in Figure 4 is twofold. First, without the retired/legacy SEAL geo-location information available, it is not at all possible to envision this network's geographic distribution across the nation accurately. However, if all the students with strong ties are visualized, an educated guess about the geographic distribution of the retired/legacy SEAL network is possible. The second reason is a reminder that while strong ties matter, they do not guarantee success. The remaining maps pertaining to the student data illustrate the control variables analyzed in the previous chapter.

The control variables of strong sport, college, and lifelong affinity deserve to be presented first among all the control variables due to the positive relations each of these variables has in relation to a candidate's ability to complete the SEAL training pipeline successfully. This being said, due to the NSW desire to create a more diverse SEAL force, the first control variable map visualizes the ethnic diversity of successful candidates from the provided data.

In Figure 5, the student's ethnicity, provided in the ethnic column of the NSW data, is color coded in the map. These symbols, one for each ethnic group, are not graduated in size to represent a count of the students represented by each dot. Not including this graduated feature to determine the count for each dot is a decision based on the following assumption. NSW knows the current force's diversity levels. The importance of Figure 5 is that it informs from where the diverse successful candidates originate. This insight allows further research to focus on these areas of interest immediately to find any underlying societal structures within these communities that influences recruitment efforts. In particular, Figure 5 aids NSW in identifying from where

non Caucasian successful candidates came in the recent past, and thus, enable ongoing NSW efforts to recruit for a more diverse SEAL force.

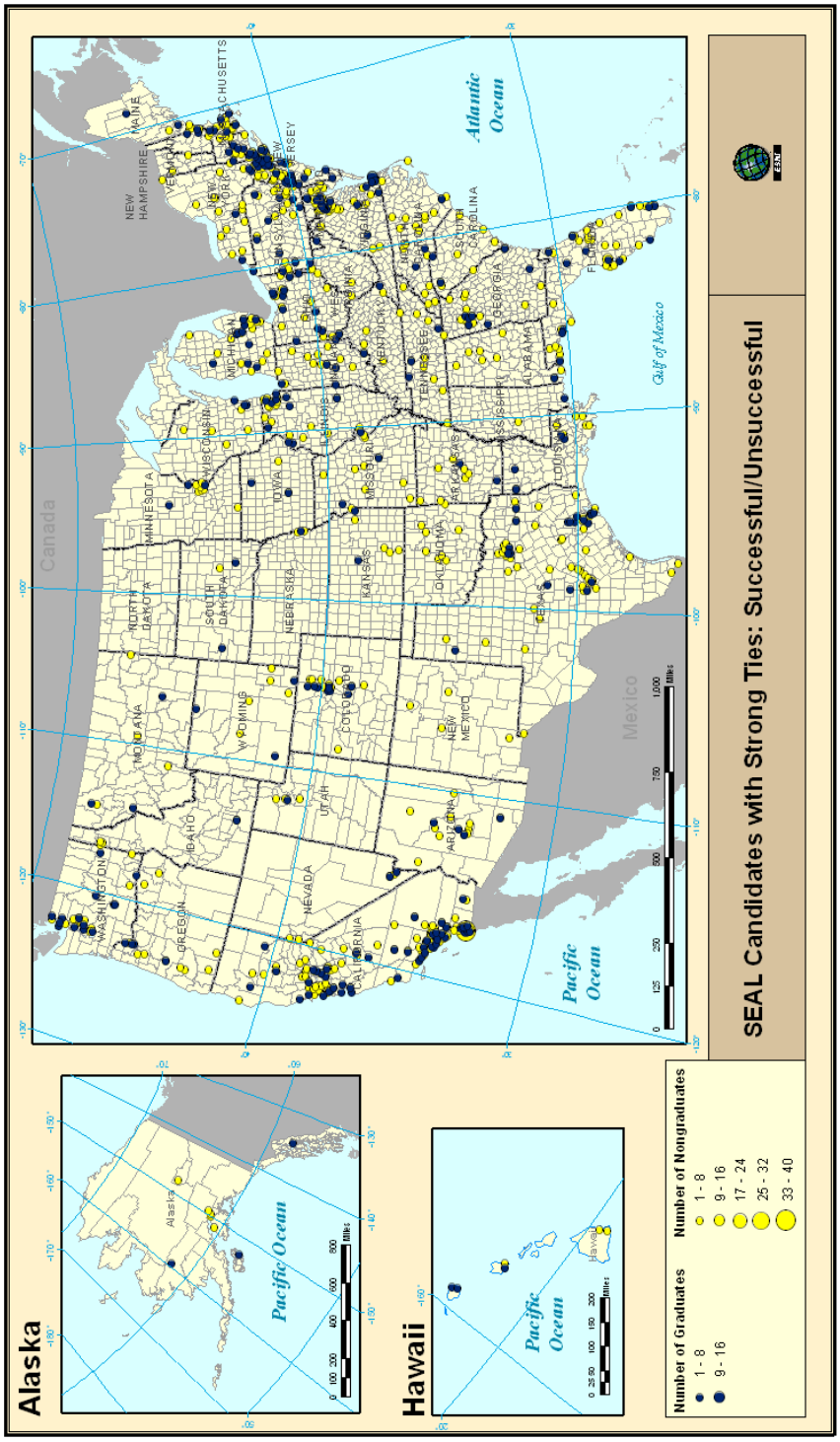

Figure 4. All SEAL Candidates with Strong Ties

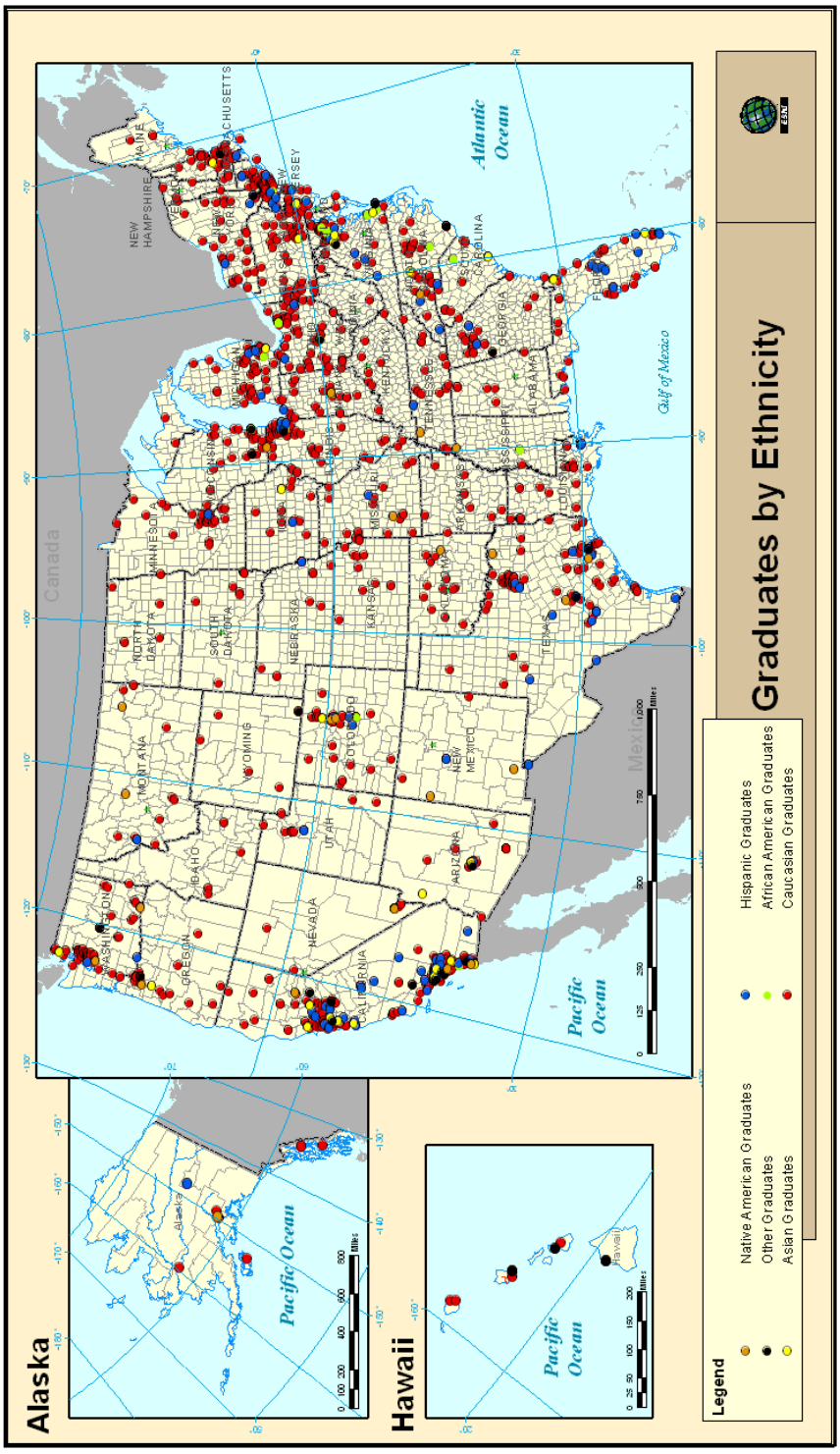

Figure 5. Ethnic Breakdown of Successful SEAL Candidates

The map illustration for Figure 6 depicts the successful SEAL students who have a 4-year college degree or better. This selection of students represents the control variable of “college” education from the regression models. The blue dots representing successful NSW (SEAL) students with 4-year college degrees are graduated in size to show the numeric range of students represented by a dot. The education control variable illustrated geographically in Figure 6, like all other student data maps, employs the same data utilized in the regression models—the BUDS-PRIDE database.

The BUDS-PRIDE database has a column indicating numerically the years a candidate has in schooling, and a column that states the highest education level completed by a candidate. Like in the models, the college variable map utilizes the non-numeric education data column. My reason for selecting this data column, for both the regression models and the geospatial portion of the research, is to avoid classifying a student as a college graduate based soley on the number of years the student attended school. Also, the students already identify themselves in the non-numeric column as college graduates or not, and therefore, elimanating the need to reproduce their work.

The observed odds ratio of the strong sport control variable of 1.41 ranks second behind the 1.68 observed odds ratio for the college education control variable. Figure 7 illustrates successful students identified with the strong sport attribute. The sports within this strong sport variable are water polo, triathlon, lacrosse, boxing, rugby, and swimming. Each of these sports is identified with its own color symbol within the map. Being able to visualize where in the nation these sports are producing successful NSW (SEAL) students can enhance the focus of current NSW initiatives with sports organizations, and aid in the development of new initiatives. For example, knowing where successful students with a lacrosse background come from can help NSW determine where to cosponsor a youth lacrosse venue. The data presented in this map only illustrate the sports identified in the first of three sport columns available for each candidate in the BUDS-PRIDE data. If NSW, in the future, wants to research the geographic reach of a particular sport, the inclusion of the two other sports columns in the database can be added. However, engaging the governing body of a particular sport will

produce a more detailed understanding of where and how the sport is situated within the communities of the United States.

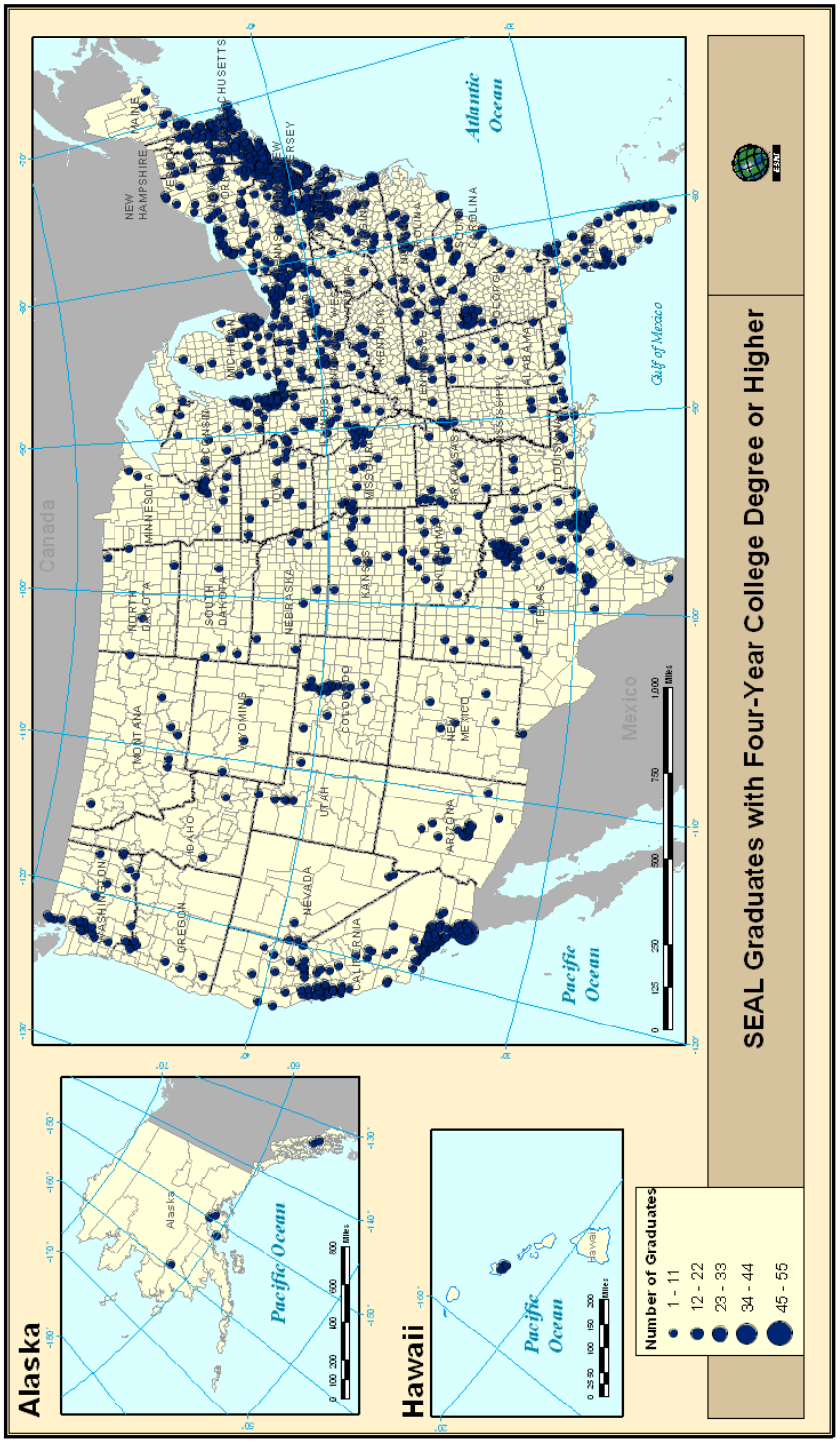

Figure 6. Successful NSW (SEAL) Graduates with 4 Year Degrees or Better

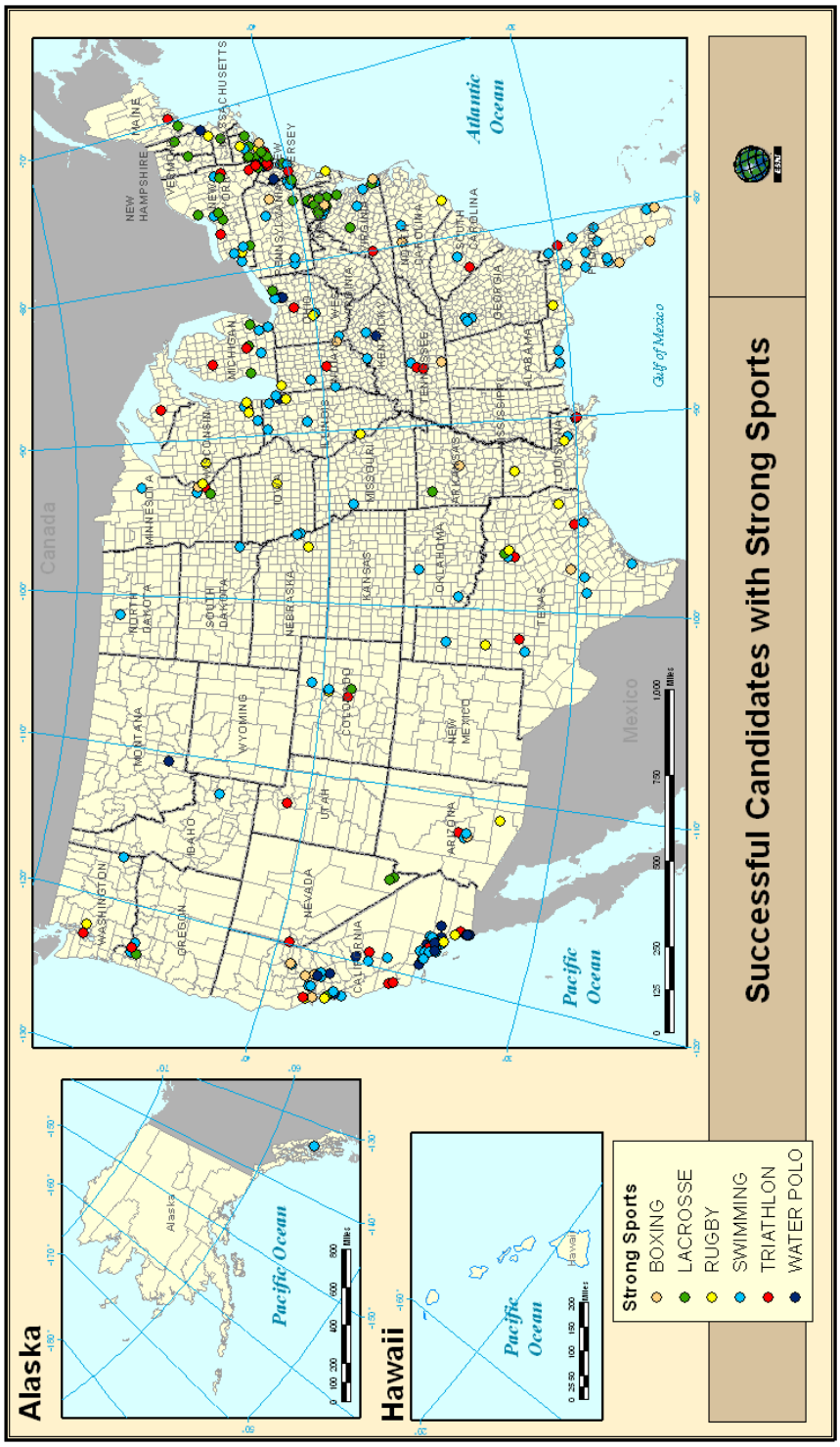

Figure 7. Successful NSW (SEAL) Candidates with Strong Sports Identification

The last control variable presented geographically is lifelong affinity. Figure 8 represents the successful students who responded in the influence column of the database with statements identifying a long continued affinity or attraction to the SEAL teams. The assumption with this variable is that all the students must have some level of affinity towards the teams to subject themselves, however briefly in some cases, to the rigors of the SEAL training pipeline. The logistic regression model's findings illustrates that this strong affinity—titled lifelong affinity—matters. Figure 8's map uses weighted symbols to illustrate the number of students with this affinity attribute in different geographic areas, and it allows the beginning of an interpretation as to how well the NSW message is being delivered and received across the nation.

The independent variables listed above are those with positive statistically significant results within the two mathematical models, and these variables are key characteristics of a successful recruit pool for the SEALs. Geographically illustrating these characteristics from the recruit data available for this thesis shows the variables within NSW. To target these variables outside NSW is reasonably more difficult but necessary to allow precision targeting recruitment efforts to be successful. Many of the variables, such as the lifelong affinity variable, discussed above will require NSW to conduct extensive market analysis to find receptive markets in the U.S. community. Other variables, such as ethnicity and education levels, are readily available for analysis and even found preformatted for geospatial analysis. The U.S. Census Bureau is a great source of demographic that may be used to inform area specific recruiting efforts.

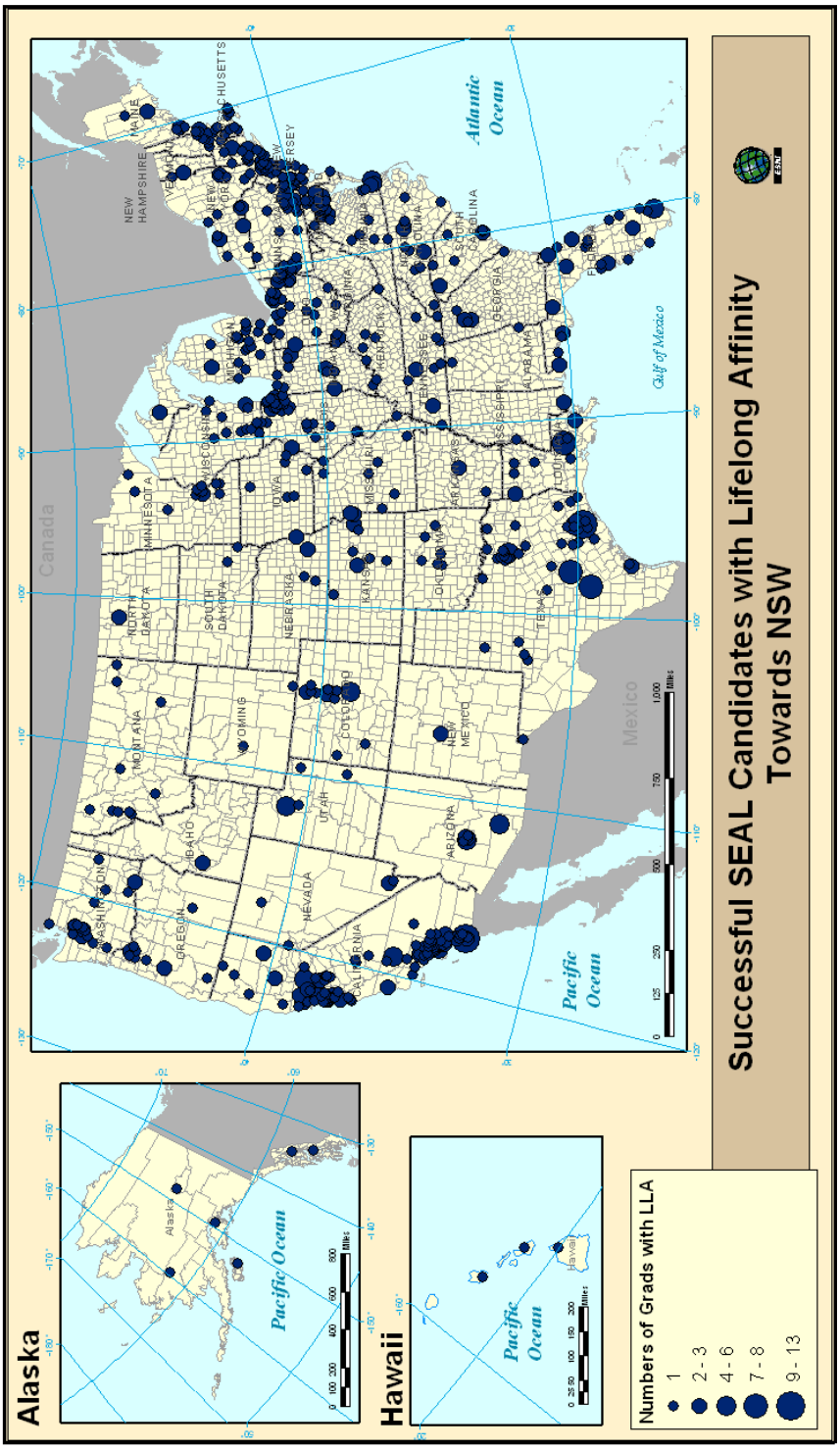

Figure 8. NSW (SEAL) Students with a Lifelong Affinity towards the SEAL Teams

C. CENSUS DATA MAPS

This section is included to illustrate methods that NSW may use to analyze available data that could impact the scope, cost and effectiveness of future SEAL recruitment efforts. It supports the overall purpose of the thesis by visualizing possible "good" recruitment areas, but by no measure is this section saying that areas illustrated in the following map products are fertile recruiting grounds. The reason for the above disclaimer is the data utilized in the creation of these maps are from the 2000 Census and not the most current available. The 2000 census data are used in this section because this census date fell within the dates of the student data used in this thesis.

One attribute shown to be of importance in the models is that of a college education. Within the 2000 Census data, formatted by ESRI for use in their geospatial analysis programs, various educational statistics by county are available. The first map created from this data, Figure 9, illustrates the numbers of males in college broken down by county. The division for the map color scheme of the county male college population is based off the mean of the county male college population. Those counties with equal to or greater than the mean of this population are colored in navy blue. Counties with a male college population less than the mean of the national average for this population and greater than zero are color coded yellow. Other columns of data pertaining to college education are available within census information. For example, Figure 10 is a map that shows the counties by the number of male college dormitory residents.

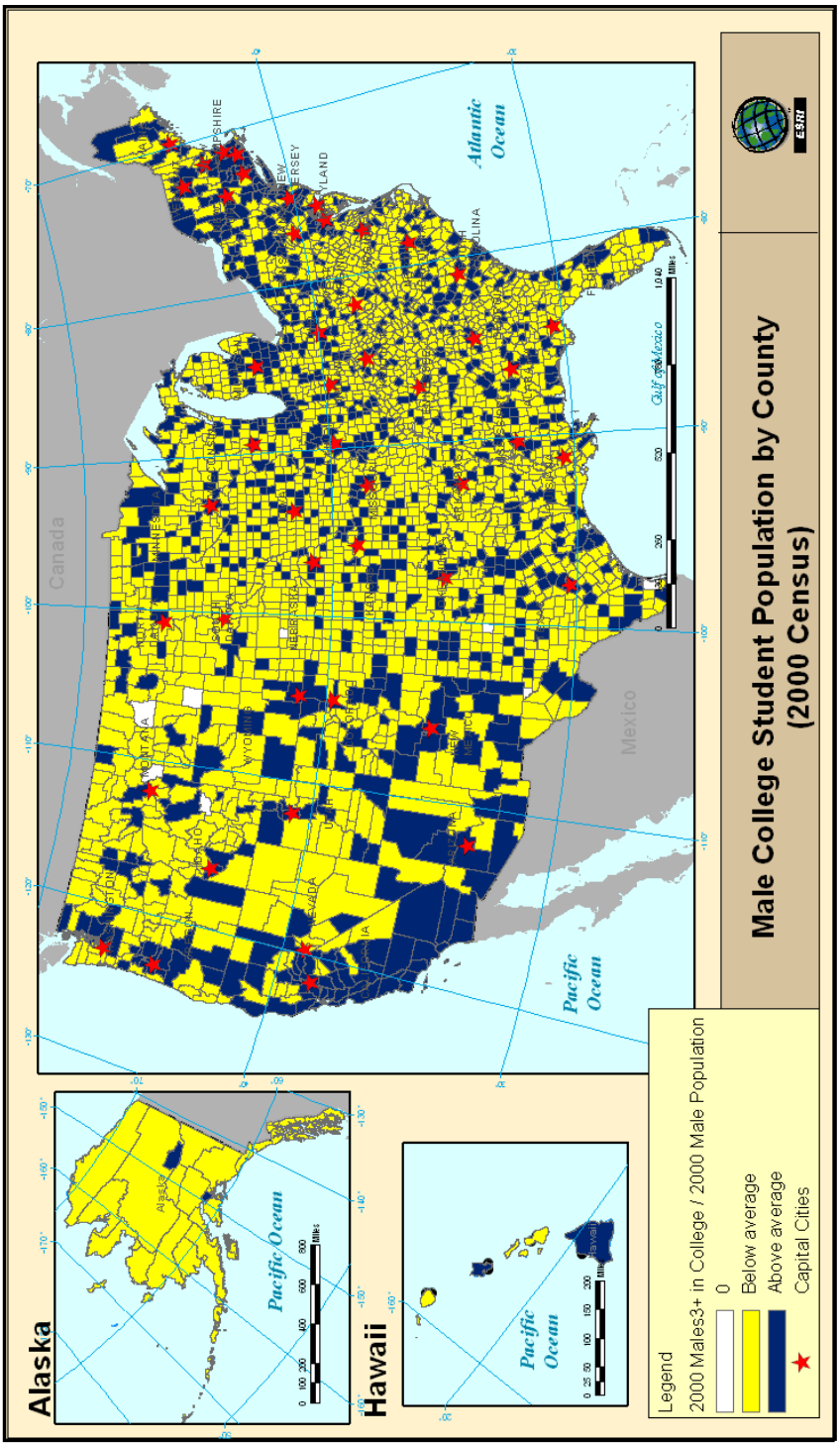

Figure 9. Male Population in College by County

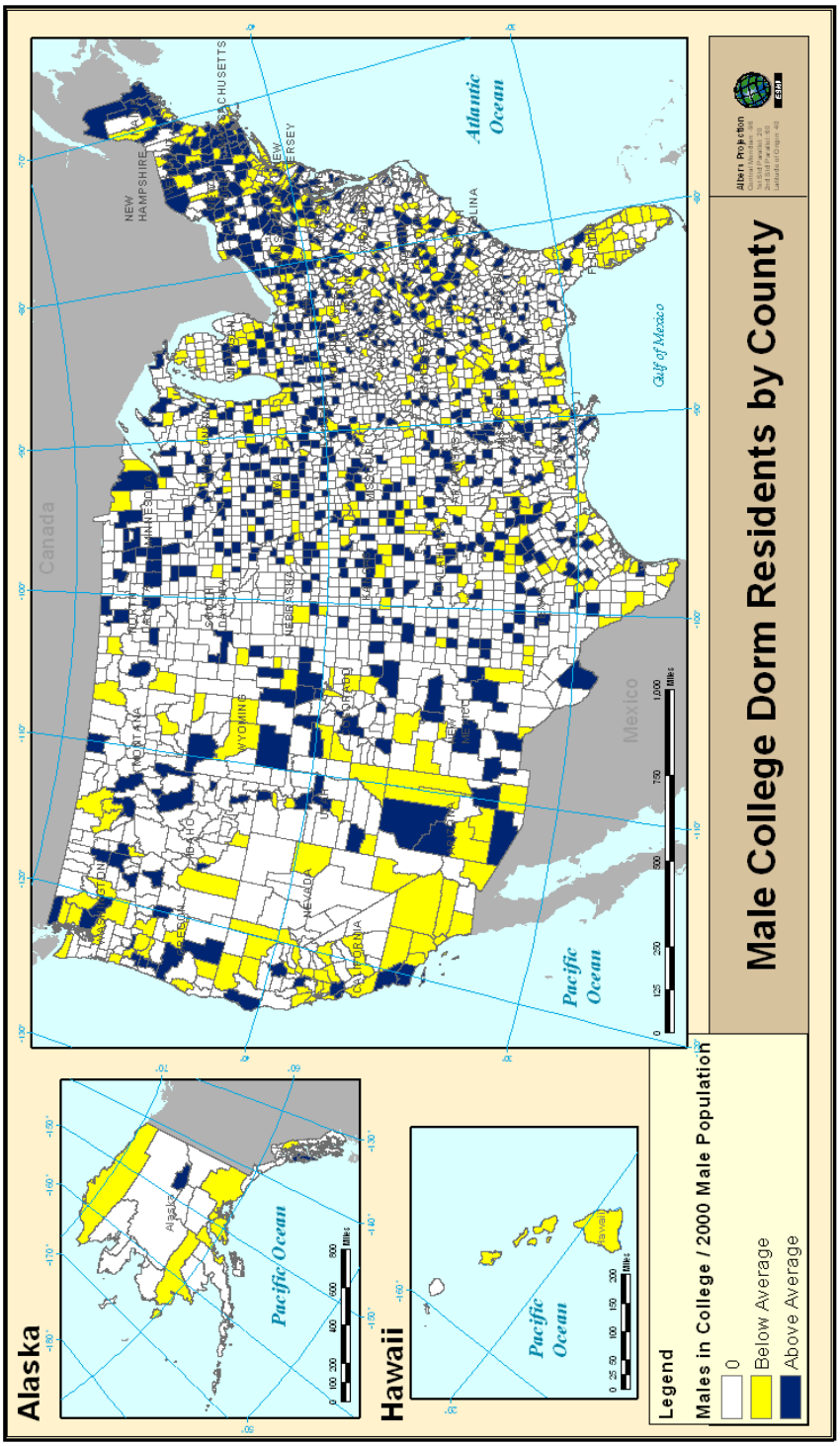

Figure 10. Male College Dormitory Residents by County

Figure 11 is an example of financial data available for study. While a candidate's family income is not discussed in this thesis, the NSWRD findings in 2009, stated "larger (>2 children) intact families with higher incomes (>$150K/Yr.) appear to produce more Hell Week Completers…."[40] Figure 11 identifies family average income levels by county. The color coding is based off the average family income levels in these counties within this family income level. Generating this type of map only requires combining existing family income data columns that already stratified the families within the desired income levels. Financial data are abundant in the census, and the ability to generate relative maps as they pertain to specific demographics desired by NSW is possible. For example, the data on family income levels are not only divided by dollar amounts but by ethnicity, so it is possible to identify areas of ethnic diversity that fall within financial left and right lateral limits if desired.

The ability to create a map based on the characteristics found in successful NSW (SEAL) students derived from census data is only limited to the creativity of the map maker. Maps on ethnicity, education, or family size, can be made. More interestingly, a map can be produced using these variables in conjunction with one another to identify specific counties that possess all or some of the characteristics deemed by NSW to be the most beneficial in producing successful students.

For example, Figure 12 illustrates counties possessing a combination of selected attributes. The first attribute selected for this map is simply if a county has produced a successful SEAL student. The second attribute selected is counties with a male college dormitory population. The final attribute selected for this map identifies counties with an average family income level higher than the national average. As the legend in the map illustrates, it is possible to see what counties have all these attributes, some of these attributes, or none at all. The inclusion of this map is to demonstrate the ability of this methodology to see areas with multiple attributes, and not an attempt to claim this selection of attributes as the appropriate selection to identify recruit pools.

[40] Naval Special Warfare Recruiting Directorate, *Final Research Findings*, 2.

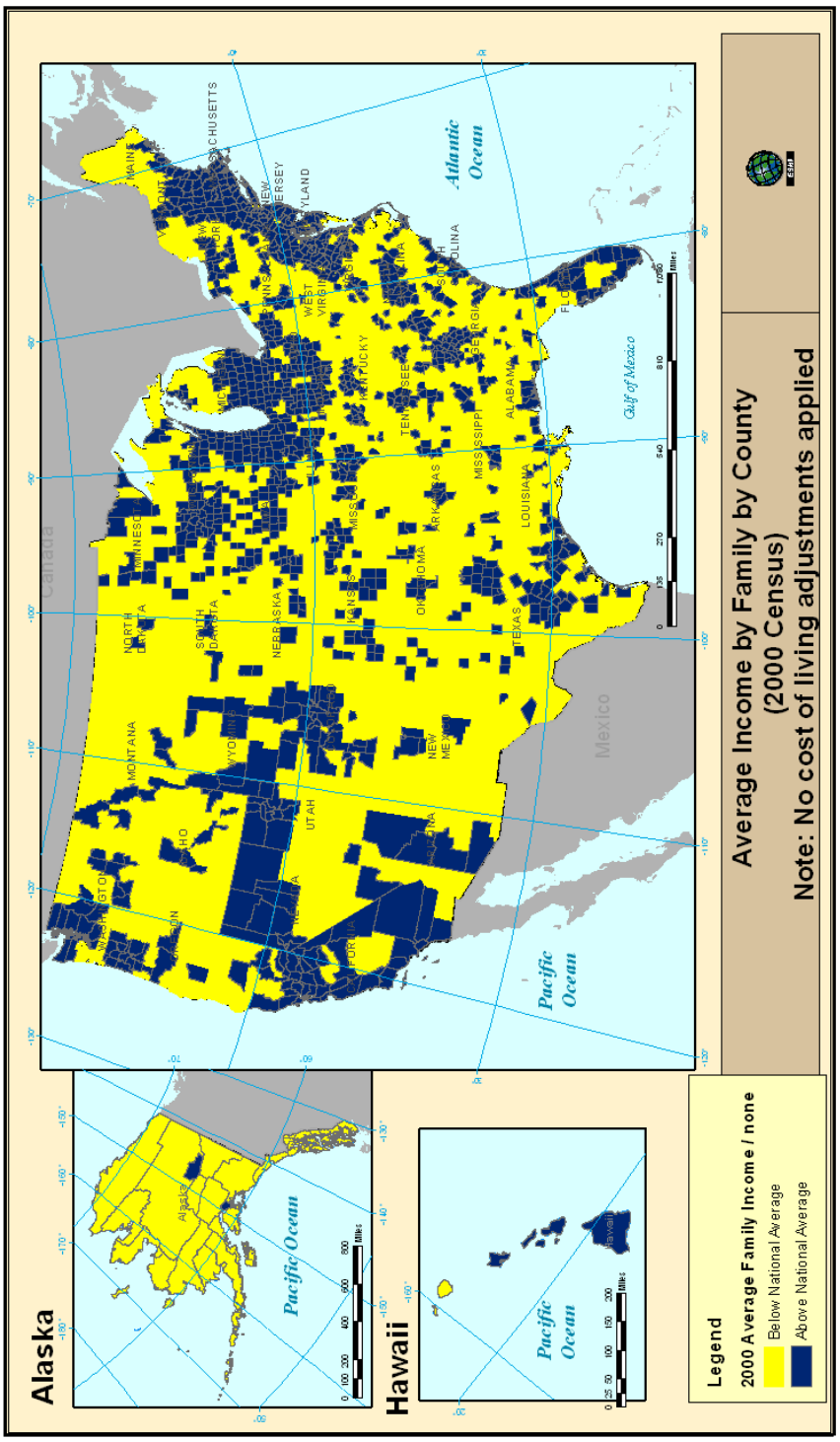

Figure 11. Average Family Income Levels by County

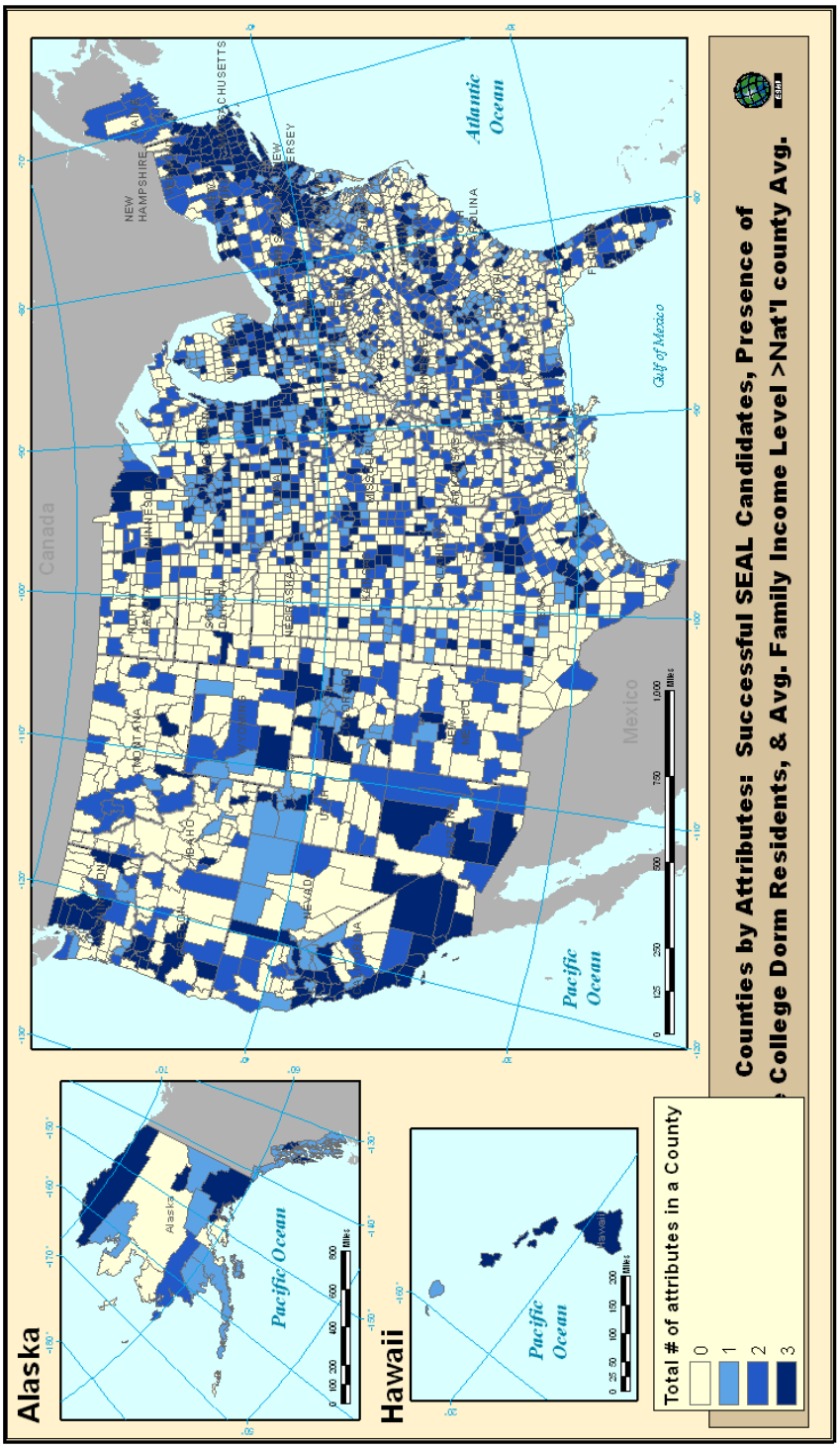

Figure 12. Attribute Combination Map

D. CONCLUSION

The creation of these maps and their subsequent inclusion within this research is aimed to arm NSW with products that clearly show the SEAL recruit network that can be lost sometimes in simple data spreadsheets. The student data map section of this chapter accomplishes this goal. The secondary aim of this chapter is to illustrate the usefulness of this methodology. The inclusion of census data maps illustrates the usefulness of this methodology for NSW recruitment purposes by showing that the more common of the desirable attributes found within the successful SEAL students, such as their education level, can be found at a larger community level by utilizing preexisting data sources outside NSW. Knowing the characteristics of particular areas, and knowing what areas have desirable characteristics, enables tailored recruitment messages to be used in the appropriate places. The possibility of highlighting areas on a map that are strong in one characteristic, or the combination of characteristics defining a good SEAL recruit, enables even more refinement in recruitment efforts. The fact that NSW collects the data on all the students attempting the SEAL training pipeline is positive; however, the amount of data cleaning done to allow the BUDS-PRIDE database to be used within a geospatial analysis program indicates that standardized data entry techniques for student data collection needs to be improved. The only negative take away from this portion of the analysis is that the information necessary to map the retired/legacy SEAL community geospatially has never been compiled, and the lack of responses to continued requests for this information to prominent members in this group indicates the low level of importance given to the issue. The importance of this information requires buy in from the SEAL retired/legacy network—if not, the results will limit any NSW attempts to leverage strong ties in creating and sustaining a larger, stronger, and more diverse SEAL force.

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V. THE WAY AHEAD

A. INTRODUCTION

The key contribution of this research is demonstrating the importance strong ties play in aiding a student through the rigors of the initial SEAL training program. In addition, it should provide NSW with a better understanding of the key attributes that good candidates possesses: where they are located, their education levels, and the sports they played. The author's proposal for the way ahead for NSW recruitment efforts is to create collaborative relationships with civilian organizations, groups, and communities to enable NSW to foster the growth of strong ties to its future recruits.

B. FILL THE GAP

Currently, NSW "officials are reaching out to parents, teachers, coaches and other "influencers" to get their message to young men;"[41] however, "with combat and global operations keeping spec ops forces deployed and in demand, the Navy doesn't have enough SEALs…to send to recruiting districts and scout neighborhoods, schools, sports teams and urban areas."[42] The inability of NSW to utilize its best resource—the men comprising the force—in an expanded capacity to create and strengthen strong ties between NSW and future recruit pools limits NSW's ability to leverage the utility of strong ties. To offset this limited ability of current SEAL operators being able participate in an increased capacity in recruiting efforts, the author proposes leveraging the retired/legacy SEAL community for community outreach programs. As stated in the findings chapter, strong ties matter. With the current operational tempo of the current SEAL force limiting its time available for recruitment efforts, a different NSW community resource must be appropriated. The best resource, next to the current force, is the retired SEAL community. Nobody but a SEAL knows what it takes to get through SEAL training, what life is like in the teams, and for these very reasons, prior SEALs

[41] Gidget Fuentes, "Officials: SEAL Diversity Still Elusive, Despite Outreach Efforts," *Navy Times*, April 30, 2012.

[42] Fuentes, "Officials: SEAL Diversity Still Elusive, Despite Outreach Efforts."

should be approached about increasing their involvement in current NSW recruitment initiatives. The time available and willingness of these prior teammates to commit to this proposed expanded role in NSW community outreach/recruiting efforts can present a problem.

Currently, individuals within this legacy network participate in the CNRC established Special Operations Mentor program, in which each naval recruiting district has a retired SEAL, EOD or diver to assist recruits in the DEP in their level of physical preparedness. This participation, while valuable, needs to be expanded to develop strong ties to potential candidates. Monetarily incentivizing participation within outreach programs is one possible avenue of approach to motivate involvement. Incentivizing participation can also be as simple as bolstering a sense of pride in former teammates of their continued importance to NSW through official correspondence from NSW leadership. Both options would be aimed at the current legacy SEAL network, and neither would guarantee increased involvement. Another possible avenue is to develop programs focusing on retiring SEALs and SEALs departing the service at the end of their current obligated service (EAOS) to fill this gap.

C. SUPPORTING COLLABORATIVE NETWORKS WITH TECHNOLOGY

Recent NSW community outreach activities with sports organizations, such as water polo, wrestling, and triathlon, have focused on event sponsorship. Expanding these endeavors to all sports identified as producing "good" SEAL candidates should increase NSW's connectivity with recruit pools by fostering opportunities for increased personal ties to grow in size and strength. The question comes to the amount of resources, money and NSW manpower, available to grow this aspect of an outreach program. Incorporating technology, specifically the web, in conjunction with event sponsoring can improve the effectiveness and scope of these collaborations, and spread the NSW narrative to a larger targeted audience without overtaxing limited NSW resources.

To leverage the power of the web in strengthening NSW relationships with the public, official NSW websites need to increase connectivity with websites to organizations and sports found to produce good SEAL candidates. For example, NSW

sites need to have links to partnered sporting communities websites on homepages facilitating easy access. Just as important, sporting organizations targeted for partnership, need to have links to NSW sites on their respective websites. For collaborative networks to work, the flow of information must be a two way street. The ability of a national sports organization to partner with a brand name, such as Navy SEALs, should be easy enough to sell due to the mutual rewards all involved receive for participating: sports organizations can swell their ranks at the local chapter, and NSW can reach its targeted audience. Perhaps, if direct links to NSW sites are not desirable for a sports organization, NSW can offer a "SEAL Training" selection as a permanent feature on their sites, which is updated regularly by NSW that at a minimum ensures the SEAL brand name is reching a larger audience.

D. UTILIZING TECHNOLOGY TO COLLECT/ANALYZE RECRUIT DATA

NSW efforts to understand the scope, size, and complex nuances of the SEAL recruit basin can be improved by incorporating new data collection technologies that structure data in ways that allow frequent and easy analysis. Applications, available today for hand held devices (smart phones and tablets), can allow NSW to collect information on potential candidates attending NSW recruiting events.[43] The data collected, no matter what event they were collected from, after being sent to a central database, can be quickly analyzed. Applying this technology to the collection of student data at BUD/S will minimize human error in the data input process, allow the data being collected to be highly adaptable, and facilitate timely analyses. The findings of this thesis indicate the importance of strong ties in increasing the probability of a candidate successfully completing SEAL training. The most effective way to identify relational factors, including but not limited to strong ties, is by utilizing social network analysis (SNA) programs that visualize the network. However, these SNA tools require structured data. If

[43] Two examples of projects that utilize hand held devices for structured data collection are Lighthouse Project and IED^{NA}. Both of these projects were developed by students involved at the CORE Lab in the Defense Analysis Department at the Naval Postgraduate School (NPS) in Monterey, CA. Utilizing forms built to collect structured data for rapid importation into various analytical programs/tools, these projects demonstrate the utility of technology in understanding complex networks with speed and efficiency.

NSW were to adopt these analytical tools, the data would have to be scrubbed and coded. Creating a NSW application, and the subsequent fielding of devices with the application, will front load the formatting requirements currently being managed on the tail end, which will make the data immediately useable/useful.

E. CONCLUSION

Together, mobilizing past SEAL generations for community outreach efforts, improving the utilization of technology in diffusing information from NSW to recruit pools, and the incorporation of a NSW SEAL application for use in hand held devices to allow faster analysis of data, will create greater opportunities for NSW to expand its reach to recruitment pools of good candidates. The ability or inability of NSW to improve upon its current utilization of either of these two resources, will directly impact the growth of NSW's strong social ties with recruits. "To effectively popularize its ideology, a social movement must be able to provide clear summations of its ideology that resonate with its target audience."[44] In other words, to make more SEALs—while maintaining quality—it is necessary to improve connectivity with the communities from which good candidates come through effective communication. Since active duty SEALs are unavailable for the expanded recruitment efforts outlined in this chapter, NSW needs to design recruitment efforts that appropriate available resources—in particular, former teammates and cutting-edge technology. Both are available, and both can aid in building stronger connectivity with potential recruits.

[44] Glenn E. Robinson, "Hamas as Social Movement," in *Islamic Activism: A Social Movement Theory Approach*, ed. Quintan Wiktorowicz (Bloomington: Indiana University Press, 2004), 129.

APPENDIX

Two tables are included in this appendix, which present the complete results of both the logistic and ordered logistic regression models presented and discussed in Chapter III. More precisely, these tables include the estimated coefficients and their corresponding odds ratios, the standard error estimated using bootstrapping methods, the z-scores and the corresponding two-tail p-values, and the 95% confidence intervals.

Independent Variables	Observed Coef.	Observed Odds Ratio	Bootstrap Std. Err.	z	P>|z|	Normal-based [95% Conf. Interval	
strong ties	0.239	1.270	0.082	2.92	0.003	0.079	0.399
weak ties	-0.098	0.907	0.106	-0.92	0.357	-0.305	0.110
strong sport (1=yes)	0.368	1.444	0.125	2.94	0.003	0.122	0.613
Marital status (1=yes)	-0.107	0.898	0.166	-0.65	0.516	-0.433	0.218
W/Dependents	-0.038	0.963	0.204	-0.19	0.853	-0.439	0.363
Lifelong affinity (1=yes)	0.339	1.404	0.075	4.54	0	0.193	0.485
Education some college	0.005	1.005	0.081	0.06	0.954	-0.155	0.164
Education college	0.613	1.846	0.127	4.81	0	0.363	0.863
Ethnic White	0.076	1.079	0.090	0.85	0.397	-0.100	0.253
Division 1: (U.S Census) New England	0.035	1.036	0.176	0.20	0.843	-0.314	0.384
Division 2: Middle Atlantic	-0.202	0.817	0.139	-1.46	0.146	-0.474	0.070
Division 3: East North Central	-0.029	0.971	0.114	-0.25	0.8	-0.253	0.195
Division 4: West North Central	0.147	1.159	0.127	1.16	0.247	-0.102	0.396
Division 5: South Atlantic	-0.561	0.571	0.109	-5.14	0	-0.775	-0.347
Division 6: East South Central	-0.606	0.546	0.211	-2.87	0.004	-1.020	-0.192
Division 7: West South Central	-0.290	0.748	0.118	-2.46	0.014	-0.521	-0.059
Division 8: Mountain	-0.191	0.826	0.114	-1.67	0.095	-0.414	0.033
Division: Other	-0.756	0.470	0.624	-1.21	0.226	-1.979	0.467
Division: Us Territories	0.273	1.314	0.586	0.47	0.641	-0.875	1.421
AFQT	0.318	1.374	0.069	4.59	0	0.182	0.454
Age arrived	-0.047	0.954	0.015	-3.11	0.002	-0.077	-0.017
Constant	-0.786		0.339	-2.32	0.021	-1.452	-0.121
Number of Observations =		6389.000	Education Reference category = High School				
Replications =		44.000	Ethnic Reference category = Non-white				
Wald chi2 (21) =		361.620	Division Reference category = Division 9 (Pacific)				
Prob > chi2 =		0.000					
Pseudo R2 =		0.030					

Table 6. Logistic Regression Findings

Independent Variables	Observed Coef.	Observed Odds Ratio	Bootstrap Std. Err.	z	P>|z|	Normal-based [95% Conf. Interval	
strong ties	0.243	1.275	0.127	2.43	0.015	1.048	1.551
weak ties	-0.034	0.966	0.102	-0.33	0.744	0.786	1.187
strong sport (1=yes)	0.350	1.419	0.141	3.53	0	1.168	1.723
Marital status (1=yes)	0.009	1.009	0.180	0.05	0.962	0.711	1.431
W/Dependents	-0.207	0.813	0.162	-1.04	0.299	0.550	1.202
Lifelong affinity (1=yes)	0.337	1.400	0.084	5.61	0	1.245	1.575
Education some college	-0.024	0.976	0.061	-0.39	0.699	0.863	1.104
Education college	0.524	1.689	0.178	4.98	0	1.374	2.075
Ethnic White	0.002	1.002	0.086	0.02	0.986	0.847	1.184
Division 1: (U.S Census) New England	-0.002	0.998	0.127	-0.02	0.988	0.778	1.280
Division 2: Middle Atlantic	-0.232	0.793	0.091	-2.02	0.044	0.633	0.993
Division 3: East North Central	-0.080	0.923	0.096	-0.77	0.443	0.753	1.132
Division 4: West North Central	0.026	1.027	0.137	0.20	0.845	0.790	1.335
Division 5: South Atlantic	-0.594	0.552	0.070	-4.69	0	0.431	0.708
Division 6: East South Central	-0.551	0.577	0.104	-3.05	0.002	0.405	0.822
Division 7: West South Central	-0.422	0.656	0.078	-3.53	0	0.519	0.829
Division 8: Mountain	-0.305	0.737	0.080	-2.80	0.005	0.595	0.913
Division: Other	-1.064	0.345	1.156	-0.32	0.751	0.000	245.308
Division: U.s. Territories	0.249	1.282	0.736	0.43	0.665	0.416	3.951
AFQT	0.300	1.349	0.088	4.57	0	1.187	1.534
Age arrived	-0.042	0.959	0.015	-2.64	0.008	0.930	0.989
/cut1		0.301	0.343			-0.370	0.973
/cut2		0.379	0.342			-0.291	1.049
/cut3		0.511	0.343			-0.162	1.184
/cut4		0.553	0.344			-0.122	1.228
/cut5		0.573	0.344			-0.102	1.248
Number of Observations =	5529	Education Reference category = High School					
Replications =	50	Ethnic Reference category = Non-white					
Wald chi2 (21) =	301.66	Division Reference category = Division 9 (Pacific)					
Prob. > chi2 =	0						
Pseudo R2 =	0.0223						

Table 7. Ordered Logistic Regression Findings

LIST OF REFERENCES

Couch, Dick. *The Warrior Elite: The Forging of SEAL Class 228*. New York, Three Rivers Press, 2001.

Ellison, Christopher G., and Darren E. Sherkat. "The Semi-involuntary Institution Revisited: Regional Variations in Church Participation among Black Americans." *Social Forces* 73, no. 4 (June 1995): 1415–1437.

Fuentes, Gidget. "Officials: SEAL Diversity Still Elusive, Despite Outreach Efforts." *Navy Times*, April 30, 2012.

Granovetter, Mark. "The Strength of Weak Ties." *The American Journal of Sociology* 78 (1973): 1360–80.

"History of the SEALs." (n.d.). http://www.sealswcc.com/navy-seals-history.aspx.

Krackhardt, David. "The Strength of Strong Ties: The Importance of Philos in Organizations." In *Networks and Organizations: Structure, Form, and Action*, edited by Nitin Nohria, and Robert Eccles, 217. Boston: Harvard Business School Press, 1992. http://www.andrew.cmu.edu/user/krack/documents/pubs/1992/1992%20The%20Strength%20of%20Strong%20Ties.pdf.

McAdam, Doug. "Recruitment to High-Risk Activism: The Case of Freedom Summer." *The American Journal of Sociology* 92, no. 1 (July 1986): 64–99.

McAdam, Doug, and Ronnelle Paulsen. "Specifying the Relationship Between Social Ties and Activism." *The American Journal of Sociology* 99, no. 3 (November 1993): 640-667.

The Measurement Group Archives. "Definitions: Logistic Regression." (n.d.). http://www.themeasurementgroup.com/Definitions/logistic_regression.htm.

Mills, Lisa J., and Janet D. Held. "Optimizing US Navy SEAL Selection." US Navy Selection & Classification Office, 46th Annual International Military Testing Association Conference, October 26–28, 2004. http://www.internationalmta.org/Documents/2004/2004072P.pdf.

Naval Special Warfare Recruiting Directorate. *Final Research Findings*. San Diego, CA, 2009.

NSW Center Public Affairs. "Growing the Force." *Ethos 8* (2010). http://www.sealswcc.com/navy-seals-ethos-magazine.aspx.

Popielarz, Pamela, and Miller J. McPherson. “On the Edge or In Between: Niche Position, Niche Overlap, and the Duration of Voluntary Association Memberships.” *The American Journal of Sociology* 101, no. 3 (November 1995): 698–720.

Robinson, Glenn E. “Hamas as Social Movement.” In *Islamic Activism: A Social Movement Theory Approach*, edited by Quintan Wiktorowicz, 129. Bloomington: Indiana University Press, 2004.

“SOF Truths.” (n.d.). http://www.soc.mil/USASOC%20Headquarters/SOF%20Truths.html.

Stark, Rodney, and William Sims Bainbridge. “Networks of Faith: Interpersonal Bonds and Recruitment to Cults and Sects,” *The American Journal of Sociology* 85, no. 6 (May 1980): 1376.

StataCorp. *Stata Statistical Software: Release 11*. College Station, TX: StataCorp LP, 2009.

Statistic Solutions. “Ordinal Regression.” (n.d.). http://www.statisticssolutions.com/resources/directory-of-statistical-analyses/ordinal-regression.

U.S. Census Bureau Official Website. (n.d.). http://www.census.gov/geo/www/us_regdiv.pdf.

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